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1823.

THE

AGRICULTURAL MUSEUM:

DESIGNED TO BE

A REPOSITORY

OF

VALUABLE INFORMATION

TO THE

FARMER

AND

MANUFACTURER,

AND THE MEAN OF A FREE

COMMUNICATION OF SENTIMENT,

AND GENERAL

INTERCHANGE OF IDEAS,

ON THE

Important Subjects of their Occupations.

Edited by David Wilcy.

VOLUME I.

Georgetown, Ca.

PRINTED FOR THE EDITOR, BY W. A. BIRD.

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THE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

Vol. I.] *Georgetown, Ca. July* 4, 1810. [No. 1.

INTRODUCTION.

In presenting the public with the first number of the AGRICULTURAL MUSEUM, without having previously solicited or obtained a single subscriber, it may be supposed that the Editor has calculated too largely on the liberality of his friends and fellow citizens. It may be so. Still, however, he would not be discouraged. This has not been the principal source on which he has relied for support. His dependance is rather on the advantages which such a Publication promises to the community than on their liberality.

For some time past considerable exertion has been made throughout the UNITED STATES, to promote the improvement of AGRICULTURE, and to encourage and extend DOMESTIC MANUFACTURES. Nor has the exertion been without effect.—In many parts of the country the success has equalled the most sanguine expectation. By the adoption of proper modes of culture the produce of whole districts has been more than doubled—thousands of acres of waste and worn out lands have been clothed with a rich abundance—the desert has been literally changed into a fruitful field—large and profitable Manufactories of various kinds have been established, and families have found it by no means impracticable, not only, to feed, but to clothe themselves from the produce of their own farms. Such a state of things may well be consi-

dered as a happy presage of lasting greatness and prosperity to our Country, and as laying a solid basis of real INDEPENDENCE. Yet much still remains to be done. The mass of the common Farmers are slow in changing their mode of agriculture—To dissipate their prejudices, they want information, as well as the successful example of their more enlightened neighbours. The institution of Agricultural Societies, and the distribution of Premiums for proper objects may be highly useful. When under suitable regulations and restrictions they may be expected to produce, ultimately, the most important results. But, without a free communication of ideas—without the means of diffusing correct principles—their operation must necessarily be retarded, and their influence on the community be circumscribed within narrow limits. The man of Science may have access to the books of other countries—he may be able to derive important instruction from them, by a proper selection of such articles as are applicable to the soil and climate of his own country. But such books are not within the reach of every one; and if they were, a judicious and profitable use of them could not be expected.—The common Newspapers are so engrossed by politics, and so devoted to party purposes as, in a great measure, to preclude their utility in this respect. The Magazines, Museums and other periodical Works, which have heretofore been published in this country, have embraced so wide a range, and been so appropriated to other sciences and pursuits, as to render them of little service to the Agriculturalist.

Similar observations might be made in regard to Manufactures. It has therefore been supposed that a Periodical Paper, devoted, almost exclusively, to the interests of Agriculture and Domestic Manufactures, must be useful, and can scarcely fail of support. The design of the Editor is to make the AGICULTURAL MUSEUM, a repository of valuable idformation to the Farmer and Manufacturer, and the mean of a free communication of sentiment,

and general interchange of ideas on the important subjects of their occupations. In this view, it will be a convenient appendage to the *Columbian Agricultural Society*. The Constitution and proceedings of that Institution, and especially the Premiums proposed and awarded at its general meetings, will be prominent articles. The proceedings of other similar Societies in the United States, and elsewhere, will be noticed. Pains will be taken to make the best selections from the most approved Authors, Journalists and Periodical Works. Original Essays and other communications on Agriculture, on Domestic Manufactures, on the Arts, and on the productions and resources of our country in general, will be received with gratitude and attention. And whilst the interests, growth and improvement of this District, and of the adjacent States, shall not be neglected, the objects and mode of Culture, the Manufactures, the Growth, the Improvements, the Roads, the Rivers, and Canals of every state and district in the Union, will be occasionally brought into view, as far as correct information can be obtained.

Nor are the benefits to be derived from such a publication, confined to the Farmer and Manufacturer alone. They will extend to every class of the community—In a country such as ours, Commerce must draw her resources and wealth from Agriculture. The great body of the population of all flourishing Towns and Cities are Manufacturers and Artisans. The citizen therefore, as well as the countryman, will see it his interest to give every aid to a measure, which, if properly supported, promises most important advantages, both to individuals and to the nation in general.

D. W.

EXTRACTS *from the Introduction to the* 2d VOL. *of the* BATH PAPERS.

A late ingenious Writer has justly remarked, that "Improvements in Tillage arise, in general, from the slow

"operation of doubting experience among men who ob-
"tain their bread by the sweat of their brows, whose
"minds are not sufficiently enlarged to adopt, but with re-
"luctance, any deviation from the practice of their fore-
"fathers, and who are fearful of risking the moderate
"certainty they possess for the prospect of greater gains
"which are yet unknown."

The truth of this observation is evident; and shews the utility of Gentlemen's forming themselves into societies, and offering premiums for the introduction of experiments, which will secure the practical farmer from loss in case of their failure. And many Members of such Societies being men of considerable landed property, have a sufficient influence to propagate the resulting advantages in their respective neighbourhoods; and have it also in their power to make experiments, which it would perhaps be imprudent for common farmers to make at their own risk.

Such Gentlemen, therefore, as patronize establishments, of this kind, do themselves greater honour than their modesty will permit them to see in its full lustre; and re- peculiarly entitled to the thanks of their country. At a very trifling expence they become the primary means of increasing the wealth and happiness of the community, who feel, through every rank and order, the beneficial effects of every improvement that tends to increase the value and the produce of our lands.

EXTRACT *from the Address of* ENOCH EDWARDS, *Esq. to the Philadelphia County Society, or the Promotion of* AGRICULTURE *and* DOMESTIC MANUFACTURES, *Feb.* 2d, 1789.

FROM CAREY'S AMERICAN

Agrieulture is a profession truly honourable: venerable from its great antiquity, and dignified by the extensive and universal blessings it daily administers to mankind, It appears, from the sacred writings, to have been

in some measure understood in the first ages, and is almost co-eval with our knowledge of the world. But the wonderful and incredible advantages we receive from it, are what we have the most reason to admire. "The art of agriculture by a regular connection and consequence, introduced and established the idea of a more permanent property in the soil, than had hitherto been received and adopted. It was clear that the earth would not produce her fruits in sufficient quantities without the assistance of tillage; but who would be at the pains of tilling it, if another might watch an opportunity to seize upon, and enjoy the product of his industry, art, and labour? Had not, therefore, a separate property in ands as well as moveables been vested in some individuals, the world must have continued a forest, and men have been mere animals of prey, which, according to some, is the genuine state of nature. Whereas (so graciously has providence interwoven our duty and our happiness together) the result of this very necessity has been the ennobling of the human species. by giving it opportunities of improving its rational faculties, as well as exerting its natural.—Necessity begat property, and in order to insure that property, recourse was had to civil society, which brought along with it a long train of inseparable concomitants; states, governments, laws, punishments, and the public exercise of religious duties. Thus connected together, it was found, that a part only of society were sufficient to provide by their manual labour for the necessary subsistence of all; and leisure was given to others to cultivate the human mind, to invent useful arts, and to lay the foundation of science."

Agriculture is that profession which promotes morality and religion. The man who labours in the field, has a constant opportunity for serious reflection; his mind enjoys a sweet and innocent repose, out of the way of difficult and dangerous temptations—he views in every routine of business, and in every day's employment, the divine dispensations of providence, and is led, as it were

by his calling, unless he shuts his eyes against the light of day to feel and express his gratitude for all the boundless mercies of heaven. He lives by fair gain, and makes no prey of others, by outwitting the unguarded; but rejoices to see his neighbours prosper. His comfort is increased with theirs, and in the midst of his rural and domestic enjoyments, his pleasing and lasting resources for happiness, are the rewards of his own industry, and the gracious liberality of his beneficent Creator.

By a successful cultivation of agriculture, innumerable are the advantages that are derived to human society. Nay, all ranks and species of created beings are affected or supported by it. Manufactures are grafted on it, as that replenishing stock, which supplies nourishment to all their different and extensive branches. It is the life of industry, and it is the soul of economy; it is that art which alone lays the foundation for a plentiful supply to the various necessities of the poor, by affording them constant employment, and exciting their industry, from which must result a consequent security to government. Few states, whose poor people are constantly employed, well fed, clothed, paid, and properly encouraged by kind treatment, are ever afflicted with discontents, insurrections or rebellions. But on the other hand, when they are depressed for want of employment, they become idle, lazy, indolent, and necessitous—and it is from the starved part of every community, that we may ever look for danger; their idleness gives time to invent, and their necessities push them forward, with a courage sharpened by despair, to perpetrate acts of the most daring criminality.

In short, in whatever country agriculture, manufactures, industry, and economy prosper, there riches, peace, morality, and happiness must prevail—They are those noble majestic pillars on which must be supported every moral and political structure—they are the vitals of commerce, the genuine parents of wealth, the social friends of virtue, and the enemies only of vice and immorality.

EXTRACTS *from the* ADDRESS *delivered before "the Society for the Promotion of Arts," on Wednesday, March 21, 1810, by the Honourable* ROBERT R. LIVINGSTON, *L. L. D. &c. &c.*

FROM THE ALBANY REGISTER.

AGRICULTURE has, till within these few years, commanded our greatest and almost exclusive attention; not only as it supplies most of our wants, but as it forms the basis of that commerce to which we have hitherto looked, not only, for the conveniences, but, unhappily, for too many of the necessaries of life. I trust, however, that the day is at hand when we shall find in our own country, without any dependence upon foreign nations, all that is essential to our support, and that you, Gentlemen, will contribute, by your personal exertions, to its arrival. No nation is truly independent, which looks abroad for articles that are esssential to its existence or its defence; since their arrival may be prevented by wars, commercial restrictions and a thousand other obstructions, over which she has no control. Commerce, as the medium of wealth, and of enjoyments which add to the happiness of social life, merits our warmest support. It stimulates our industry, by affording a market for our produce, and by giving us in exchange commodities that add to our conveniences, or encrease our enjoyments. But unhappy is the nation which is compelled to rely upon it for articles of the first necessity! Should a country be placed in such a situation, as to be driven to seek its bread, by traversing half the globe, instead of raising it at home, such a country could never be secure against famine. War, a failure of crops in the state from which they were usually supplied, or more advantageous markets, might put their very existence at hazard. Clothing is not less essential to us than bread, and yet we rely for it on the precarious issue of commerce, instead of manufacturing for ourselves. It is true that we have hitherto been able to procure it in exchange for the produceof our soil; but are we sure that this will always be the case? May we not be at war with

the nations from whom we receive our supplies? May not our harbours be blockaded? May not our own crops fail, or those of foreign nations be so abundant as not to need our supplies? All these accidents are certainly within the compass of probability. But grant that none of them happen, still are we not tributary to the nation by whom we are supplied?—Let it be remembered that in every country the manufacturer must be fed, must be clothed, and must pay the taxes and burdens imposed by his government; and that all these expences must be repaid by the consumer. But this is not the only evil that results from our looking to foreign nations for a supply of necessaries. It debases our national spirit, by exciting a sense of dependence. It renders commerce a primary instead of a secondary object, both with the government and the people. It destroys some of the essential advantages that we might derive from our distance from the ambitious despots of Europe. It involves us in all their disputes. It places our hopes and our fears on the side of one or other of the contending nations, whose thunders might roll and lightenings flash unregarded by us, if our floating property did not make us tremble at the storm.

THE

CONSTITUTION

OF THE

COLUMBIAN AGRICULTURAL SOCIETY.

1st. That the society shall be called, "The Columbian Agricultural Society for the promotion of Rural and Domestic Economy;" and be continued for the term of three years from the third Wednesday of May next.

2d. That there shall be hereafter, in every year, two general meetings of the society, to be held on the third Wednesday of May and November, at such public house or other place, in Georgetown, as may from time to time be appointed; at which meetings the members present shall

form a quorum, and be competent to do all business which may properly come before them.

3d. That the officers and agents of the society shall be a President, Vice President, Secretary, and Standing Committee, who shall be appointed at this meeting, and at every general meeting in November hereafter.

4th. It shall be the duty of the President to preside at the general meetings of the Society, and at the meetings of the standing committee—to hold correspondence, immediately, or by means of the Secretary, with the members of the standing committee, and such other members of the society, or of other Societies, or such individuals in the United States, or elsewhere, as he may deem proper, for the purpose of obtaining and communicating information relative to the objects of the institution, and to be in all respects the organ of the Society and of the Standing Committee, except as to the collection and payment of money.

5th. The Vice President shall be ex-officio a member of the Standing Committee, and in case of the absence, death or resignation of the President, shall supply his place.

6th. It shall be the duty of the Secretary to make and preserve a record of the transactions of the Society, and of the Standing Committee; to collect, preserve, and under the direction of the Society or President and Standing Committee, pay out all subscription or other monies due to them, or subject to their control, and at every meeting of the Society, to exhibit such statement of his receipts and expenditures, as shall be to them satisfactory—and to do and perform such other matters and things, as may be directed or enjoined by the President, by the Standing Committee, or by the Society.

7. The Standing Committee shall consist of twenty members, selected from the several counties of the District of Columbia and of the adjoining States—They shall hold their first meeting on this day, and at such other times and places as they may appoint, or as they may be called to meet by the President; the number convened, not less than five, shall form a quorum—It shall be their duty, when

so convened, to determine upon, fix and make public, such premiums, under proper restrictions, as they may deem most conducive to promote the views of the Society; in the absence of the President, Vice President and Secretary, or either of them, to make a temporary appointment of a suitable person or persons in his or their place; and in general to take such measures and do such things, under the direction of the Society, as shall to them appear meet—And as individuals, it shall be their duty to pay a particular attention to the state of agriculture in their own neighborhoods, to the manner of raising and supporting stock, and to the progress of domestic manufactures; and in conjunction with such members of the Society as may reside in their vicinage, to use their endeavors to correct such errors and to introduce such improvements, in rural and domestic economy, as they may be enabled to discover from their own experience and observation, or from their correspondence and connection with the Society.

8. All premiums shall be adjudged at one of the general meetings of the Society, by a board or boards, of five members, appointed by the President and Standing Committee, from among such disinterested persons as may be present.

9. No person shall be allowed to exhibit any article for premium unless it has been raised, grown, or made in some County of this District, or of the adjoining States, in which there shall reside at least one member of this Society, or any article for which a public premium shall have previously been given.

10. No premium shall be given for any articles of manufacture, which have not been either spun or woven in the families from which they may be exhibited, and which have not been both spun and woven in this district or the adjoining states.

11 The Society will lay no claim to any article for which a premium has been awarded, but the owner or exhibiter may, immediately after the adjournment of the society on

the day of exhibition, remove such article, and dispose of it at pleasure.

12. The subscriptions of the members shall be paid to the Secretary, on or before the 10th day of April in each year.

The members of this Institution already amount to upwards of one hundred and thirty, and each pay ten dollars a year, to be expended in premiums.

The society held their first exhibition, at their General Meeting in Georgetown, on Wednesday the 16th of May last, when Premiums were distributed as follows.

PREMIUM 1—ONE HUNDRED DOLLARS,

For the best two toothed Ram Lamb.

Adjudged to Mr. Solomon Cassidy, of Alexandria County, in the District of Columbia.

PREMIUM 2—EIGHTY DOLLARS,

For the next best two toothed Ram Lamb.

Adjudged to John C. Scott, Esq. of Strawberry Vale, Fairfax county, Virginia.

PREMIUM 3—SIXTY DOLLARS,

For the next best two toothed Ram Lamb.

Adjudged to William Marbury, Esq. of Blue Plains, Washington county, District of Columbia.

Best (applied to the above articles) as to quality of wool, and quantity in proportion to carcase.

PREMIUM 4—THIRTY DOLLARS,

For the best piece of cotton cloth, proper for men's coats, or women's dresses, not less than ten yards.

Adjudged to Mrs. Martha P. Graham, of Dumfries, Prince William County Virginia.

PREMIUM 5—THIRTY DOLLARS,

For the best piece of fancy patterns for vests, not less than ten yards.

Adjudged to Mrs. Sarah M'Carty Mason, of Hollin-Hall, Fairfax County, Virginia.

PREMIUM 6—THIRTY DOLLARS,

For the best piece of cotton cloth, suitable for pantalons or small clothes, not less than ten yards.

Adjudged to Mrs. Anna M. Mason, of Analostan Island, Washington county, District of Columbia.

PREMIUM 7—TWENTY DOLLARS,

For the best cotton counterpane, full size.

Adjudged to Mrs. Elizabeth Maynadier, of Belvoir, Ann Arundel county, Maryland.

PREMIUM 8—TEN DOLLARS,

For the best pair of cotton stockings, large size.

Adjudged to Miss Catharine Shackelford, of Culpeper county, Virginia.

PREMIUM 9—THIRTY DOLLARS,

For the best piece of hempen or flaxen sheeting, at least ten yards.

Adjudged to Mrs. Sarah Chichester, of Newington, Fairfax county, Virginia.

PREMIUM 10—THIRTY DOLLARS,

For the best piece of hempen, or flaxen shirting, not less than ten yards.

Adjudged to Mrs. Gunnell of Fairfax county, Virginia

PREMIUM 11—THIRTY DOLLARS,

For the best piece of hempen or flaxen table linen, not less than ten yards.

Adjudged to Mrs. Anna M. Mason, of Analostan Island, as above.

PREMIUM 12—TEN DOLLARS.

For the best pair of hempen or flaxen thread stockings, full size.

Adjudged to Mrs. Dennison, of Fairfax county. Virginia.

PREMIUM 13—TWENTY DOLLARS,

For the best piece of twilled bagging, of hemp, flax, or cotton, at least ten yards.

Adjudged to Mrs. Sarah M'Carty Mason, of Hollin Hall, as above.

PREMIUM 14—TWENTY DOLLARS,

For the best piece of bedticking, of hemp, flax, or cotton, or in part of all, or either, not less than ten yards.

Adjudged to Mrs. Sarah M'Carty Mason, aforesaid.

PREMIUM 15—FIFTEEN DOLLARS,

For shearing a Sheep in the neatest, safest, and most expeditious manner.

Adjudged to Mr. Edward Eno, of the city of Washington.

FOR THE AGRICULTURAL MUSEUM.

Five Minutes Reflection on Sheep.

This valuable animal has been much neglected, and little understood in our part of the country, Virginia and Maryland, where I have only known it. The introduction of the Merinos will, it is to be hoped, do good by, at least, awakening the attention of the community to the better care of one of the best stocks we possess. I do not mean here to speak of the relative fineness of wool, but to drop a few hints as to the rearing of that estimable material. This can only be done by the due cultivation of the soil, on which it is propagated—the back of the sheep.

I have been myself, for years, in common with my neighbours, guilty of manifold omissions and neglects on this score. Having now, in some measure, corrected the procedure on my own farm, I owe it to them to give in my experience. In these States, with but few exceptions, sheep have been considered as a stock able to shift for itself, to do without care, and without food, except what

it picks from the fields, as well in winter as in summer; hence, every year, poverty and disease arising from poverty; every year a loss of lambs and a miserable pittance of dry wool half fallen off, consequent on poverty and disease; and every four or five years, infection and death by wholesale.

The following are the only three simple rules necessary to be observed, to give and to preserve fine Sheep and good wool.

Nurse your lambs when they first come into the world.

Support your sheep in good heart at all seasons while they live.

And do not suffer them to live longer than they can feed with industry and vigor.

The breeders should be put together so that the lambs may begin to drop about the 10th of February; by this time the winter is broken, and every day looks to milder weather. Early lambs are of advantage, and with care, at this season, even ninety five in an hundred may be saved. Where more than five per cent. is lost in lambs, there is neglect. With the double lambs, there may be readily raised, every year, more lambs than there are ewes—To secure this care, let it be remembered that "the eye of the master is the most sure." At this interesting period he should see his flock, at least once a day—and the man who attends his sheep, and who must be trusty and handy, should visit them at short intervals, throughout the day, and particularly early and late, during the time of yeaning. Let there be prepared a small lot or paddock, near the common pen, and shelters. In the paddock, let there be a shed or cover of some kind to keep off rain and snow, under which fix a parcel of little pens, five or six feet square, and three feet high, no matter how rough, and in number proportioned to your stock. Ten, for one hundred ewes will be enough, for the purpose of confining a ewe and lamb occasionally.

A ewe goes twenty one weeks, two or three days more or less. By having noted when the rams were put into the

flock, it may be known when to expect the first lambs. Let the ewes be narrowly observed from this time, and as their bags spring, and indicate the approach of a birth, within two or three days, (to permit which to be easily observed, as well as for cleanliness, their tails should be all short) let them be put into the yeaning paddock—To separate the ewes about to yean, and to keep them separate from the flock for a few days after yeaning, is best at all times; in cold weather, absolutely requisite.

The sheep is a timid foolish creature; any one of them is with difficulty restrained from following the flock. If the ewes at this season are all left in the common pasture, when the flock moves, a ewe that may have just dropped a lamb, and particularly a first lamb, is very apt to run after them, and leave her young to freeze or to starve. Again, in the midst of a flock, it often happens that a ewe, during the first day or two, by the crowding of others, and the frequent change of position, gets confused and doubtful as to her own lamb—and presently mistakes and disowns it. It is surprising to see what degree of cold a young lamb will bear, and how thrifty it becomes, if passed safely through the first forty eight hours; during which time, and most particularly for the first twelve hours, they are liable, if exposed to wet and cold, and if not licked and caressed by the ewe, to be frozen or starved to death. It is in this way, that nine tenths of the lambs lost do die.

In the yeaning paddock, each ewe need not remain more than four or five days after yeaning, and consequently no more than seven or eight days altogether, if carefully observed and put in at the right time. Thus it will not be crowded, and those that are there can the more readily receive the requisite care from the attendant. In open weather no care is necessary to the ewes in this paddock, but to give them access to the shed, and to feed them as the flock. If falling weather, or snow on the ground, the ewes on the eve of yeaning, should be put each in one of the pens under the shed, on a little dry

straw, and there kept with the lamb till it is two or three days old. If a ewe should not be fond of her lamb, or not own it, as it is called, confinement with it in one of those pens for a few days, will put all to rights. Particular attention should be paid to the bags of the ewes—and if found to swell and harden, as they will sometimes do, from a great flow of milk, a little before or after the lamb comes, they should be carefully drawn, once or twice a day, and brought to by a soft hand. It sometimes happens that for want of notice to this simple fact, the lamb starves and dies in sight of plenty, without being able to touch a single drop.

Instances of this have come within my own knowledge. Care should be taken to keep the tails of the lambs clean at the vent for a few days after birth, as they are apt about that time to get corked there, from the glutinous nature of the first excrements—I would recommend that the tails of all the lambs, of both sexes, be cut off within two or three inches of the root—in all for cleanliness—and as to the ewes there are additional reasons, one of which has been before given. This operation may be performed at eight days old, if mild weather, or as soon as the frost is over; at the same time the mark on the ear may be put on. As to the castration, unless in very cold or very hot weather, it is safe at any time, in skilful hands, from the age of eight days to three months, and the sooner the more safe—The lambs should be weaned at from four to five months old, at that age they can shift for themselves; and time should be given to the ewes to recruit, before they are put to propagate. As the season otherwise suits well, I make my lambs set up for Independence on the 4th July, in remembrance of our great national weaning—My overseer, who is an old Soldier of those days, says it brings good luck. I do not suffer my ewe lambs to go to the ram until they are in their second year.

(To be continued.)

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THE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

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Five Minutes Reflection on Sheep.

(Concluded from our last.)

As to the treatment of the flock in general, the best thing to be offered them is good pasturage, in this climate from about the 20th of April till the 10th of December; a little sooner or later according to the season—between which periods they must have food from the racks and troughs—Let the racks be well stored with good hay, clover or timothy in preference, for them to go to at all times. From the troughs give them at the rate of about a gill of Indian corn a day, or its equivalent in oats, peas and the like, through the winter, and in hard weather double the quantity. Irish potatoes chopped, or passed through a cider mill, is an excellent food from the trough, and particularly toward spring for the ewes that have lambs.—Turnips, so much recommended in England, I consider no object here; there is difficulty too in preserving them either in the ground or out of it, through our winters; and as to folding, though I never tried it, I apprehend that it injures sheep more than is compensated by the manure, or the saving of food. Good hay alone, given in plenty, will carry a flock well through the winter. If your stock is small and your pastures or meadows fine and extensive, they may do tolerably well, but there can be no doubt that good feeding in winter is real economy, as much so as putting manure and additional labour on a poor field, is in Agriculture; the produce amply pays the additional trouble and expence; the encrease of quantity and quality of the wool, the number of the lambs raised, and the con-

dition of the whole flock, give a clear profit on the consumption of the food from the rack and the trough; and the great advantage of this system will be found to be that a Farmer may, on the same ground, with a little additional care and attention, support four or five times as many sheep as he did on his old plan; because he then made his calculations only on what his pastures could do for them in winter—and when he found that if he encreased his flock beyond a given number, they became dirty nosed, roach-backed, coughing, losing their wool, he considered himself overstocked, and killed or sold off, and so he was indeed as to the mere scuffling in winter for the little herbage left by the frosts within their reach.

There is no doubt that one hundred acres of good pasture land, will support from the middle of spring till frost, four hundred sheep. If it is profitable then to feed in winter, it is clear, that every Farm may have its stock more than quadrupled, because these one hundred acres under the present practice, will not carry through the year more than sixty or seventy sheep, even where by some tender master, a little straw or corn-fodder is thrown them to pick under their feet. Salt should be given, where distant from the influence of salt water, in the troughs, or on flat stones ranged for the purpose, twice a week winter and summer. Green food early in spring is very advantageous to the ewes and lambs—Orchard grass, and the Peruvian grass (so called in this part of the country) afford early pasture, but I think the best way is to sow a piece of Rye, every fall early on purpose—this will occasionally afford a good bite through the winter, and in spring may be fed as late as the 20th of April, and then give, if the season is favorable, a good crop of grain.

To feed the flock securely and conveniently in winter, let there be a roomy pen fixed on a piece of dry ground, with a thatched shed drooped to the north—open on all sides but on the north, long and wide enough to admit the racks and troughs under cover, and to afford room to the flock to lie dry. Beside a gate for the attendant to go

through, let there be a pannel open to the height of three feet—this will receive the sheep, and exclude other stock, except hogs, which should not be suffered to run in the sheep pasture—in and out of this pen let them pass at pleasure at all times. After every fall of rain or snow, the interior of the pen should be strewed pretty thickly with clean dry litter, and the space under the sheds be scraped clean, and littered afresh every two weeks; the manure so made will be an object. It will be very useful to have within the enclosure, a copse of cedars, or pines, to which the sheep can have access during the winter to browse on; the resinous substance contained in the leaves of these trees, are both grateful and salubrious to them—in default of such a copse, if there be any of the trees within convenient distance, the boughs should be brought and thrown into the flock twice a week during winter.

There must be water in the pasture, for although sheep do not require drink in summer when at grass, at this season, and when on dry food, it is absolutely requisite to them.

There is a prevalent opinion, with which I do not hold, that sheep do best at all times without confinement or shelter; this is true as to confinement, except occasionally at yeaning time, but not as to shelter; they want no defence from mere cold; nature has sufficiently covered them against that, not so as to wet and cold combined. The having their fleeces drenched with cold rains, the being for months on the wet and frozen ground, impairs their condition, brings on coughs, and engenders disease.

It is certainly true, however, that the standing and lying on their own filth, will sooner or later infect the flock; but in winter, and with the precautions I have advised, as to cleaning out the sheds frequently and littering the pen, there is little danger. From the middle of April to the middle of December, there is no need for pen or shelter; unless an enclosure to guard against dogs at night, in which case it should be so constructed as to be moved frequently, made six or seven feet high, and the rails or paling placed upright, and on the outer side; indeed at very little expence a moveable shelter and pen for the winter can

tablishment, if danger is apprehended from feeding too long on one spot, might easily be contrived, and made also proof against dogs.

It is of great importance to have the flock entirely gentle. The sheep are more readily fed and inspected, and when it is necessary to handle any of them, as will frequently be the case in a system of good care and good feeding, there is no racing or penning, which, beside the delay and trouble of the thing to catch a single sheep, annoys and disturbs the whole flock—and some times accidents happen. It is easily effected, by making it the particular business of some one sedate careful person to attend to the flock. Let him by degrees, and particularly in winter, accustom them to feed while he is in the midst of them, and often to take it from his hands—and those among them that are the most shy, let him, by slow approaches and kind usage particularly attend to—he will soon have the whole flock at his call, at any season of the year, and under his hand, he may take hold of any sheep he wants. A good shepherd should know, and he may very soon come to know every individual in his flock, if not a large one, and if very numerous, he should at least know forty or fifty of the most remarkable.

The principal cause of the decay of flocks, is that the old sheep are not removed from it in season; any man will acknowledge the truth of this remark, who will be at the pains of observing. He will find that, with the same treatment, the young sheep (up to six or seven years old) will be in good case, while those older will be thin; and those yet more advanced miserably poor and apparently diseased. It is a short lived animal, comes soon to maturity and soon declines; and although there are instances that a sheep lives and propagates to twelve or fifteen years, they are rare; the rule is otherwise. The time of shearing is the time of general inspection, and of disposal of the flock. Then let the master's eye be scrutinously placed on every sheep he owns—to chuse his lambs to breed from, to mark, to fat, and to dispose of in the course

of the fall and winter, not only such wethers as are now of proper age, but above all to examine the coats and mouths of his grown breeders, and to set apart for the butcher all that have broken mouths or indifferent coats. A sheep at birth has his mouth full of lambs teeth, eight on the lower jaw (every body knows that he has none at any age on the upper jaw) at one year he drops two of these in front and acquires in their place two sheep's teeth—the second year he gets two more, one on each side of these last—the third year he has two additional in the same way, and during the fourth year, there come out the two last sheep's teeth, one on each outer side—thus at the commencement of the fifth year, the mouth is full, as it is called—having now eight sheep's teeth on the lower jaw; during the sixth year, the mouth begins to be, what they term, broken; that is, the teeth are wearing away in front; and in the seventh year they have all become smaller, and several are worn near to the gums; the animal is no longer able to pick and manage his food, in pasture, at the rack or trough with the same facility; his constitution begins to fail; the younger and more vigorous competitors cull the best grass from him in the field, and shove him out of the way of good fare in the pen. It is then folly to keep him longer under these disadvantages, and the more is the folly, because as a sheep propagates as early as a dunghill fowl, and with the requisite care, such must be the encrease of the flock, that to keep them down to a given number, the only question as to the females will be, whether to kill off from the lambs or the ewes—and in what proportionate quantity. The rule is, never to shear more than six fleeces from a sheep, unless as to a particular animal which may be preserved on account of uncommon qualities.

The best season for shearing, I have found to be the middle of May; there is danger in taking off the coat too early—if a cold rain should fall on sheep soon after they are stripped, many will be lost; so sensible are they, at this time, to the changes of the atmosphere; and should a

spell of cold rainy weather overtake them within a few days after they are shorn, the only remedy is to house them till it is over.

As any farmer may in a little time renovate his flock, by getting rid of the old subjects and supplying in plenty wholesome provender, so may he in a very few years, greatly change and ameliorate his wool, as well as increase it in quantity, by selecting for his breeders only such as have desirable coats; without having recourse to new breeds. At the shearing season, the fleece is full grown, and all its defects or advantages may be seen; at this time then let the final selection be made among the grown sheep; since however promising a lamb may have been, as to size and form, when turned out, its wool can only be judged of when he comes to the first shear. Seek for wool curled in the fibre, set close on the pelt, and free from stitched hairs as they are called—(hairs interspersed throughout the body and principally about the back and rump) and without much breeching, (long straight haired spots on the thighs)—a single ram with these defects will entail mischief on the flock for many years—and every ewe of this description will be removing to a greater distance the period of improvement.

It is an error, but too common, to judge of a sheep from the apparent bulk and form given by a coat of long coarse hairy wool; it is deceptive and imposes on a superficial observer. Let such a sheep be stripped, and then examine his carcase and his fleece, the first will be found to have lost all its supposed beauty and advantage, and on inspecting the fleece, they will not be discovered to have been left there; this will be seen to be too long and too harsh for carding, fit only to fatigue and vex the good housewife and her spinners—and to make, even among coarse fabrics, stiff uncomfortable clothing.

Any person however unaccustomed to examine wool, may soon habituate his eye to the relative qualities, so as to be a competent judge of any fleece or detached lock, and the speediest way of effecting this, is by frequently drawing samples from individuals of one's own flock, and those of

his neighbors and comparing them, taking care to draw them from the same part of the body, because in most sheep there are different qualities of wool on the different parts; half way down the side adjoining the shoulder is the best place to draw from, for quality and uniformity.

I do not think it is desirable to wash the wool, as some practise on the sheep—It is a disagreeable process to the operator and to the sheep, and as I believe endangers their health. I would recommend that they be shorn unwashed. Let the finest wooled sheep be separated by inspection before shearing, let the fleeces of these be made up carefully without breaking; and when the wool is to be washed, let them be opened on a plank floor and stretched out with the skin side next the floor, thus the parts of the fleece may be readily distinguished. Take off the breeching or hinder part, the most of the belly, and the tags, throw these among the coarse fleeces, and there will be left the better parts of the best fleeces, and an easy assortment will have been made of the fine from the coarse for family purposes. A tolerable selection cannot be made after all the fleeces have been mixed and broken in the process of washing and drying.

As to myself, I have, as yet, been fortunate in knowing but few diseases to which sheep are subject, and therefore am not acquainted with many remedies. The principal disease from which I have suffered, and from which I did suffer sorely for several years, after I began to raise this stock, my people called *the country distemper*—I have already described it; dirty noses, coughs, wheezing, roached backs, pinched flanks, loss of wool before shearing time, great mortality in lambs, and frequent deaths among the old sheep, so that I had often to buy in to keep my number up; it was thought infectious, and the worst were separated. In some years they all had it, and then I had often thoughts of getting rid of the whole on any terms, and procuring a fresh and more healthy stock; at length it struck me, on observing a flock at a friend's house on an excursion in a neighbouring state, feeding at

the troughs and racks in winter, that it was possible such medicine might be of service to my own sheep. I applied it immediately on my return home, and in a few weeks was gratified to find that it had relieved about two thirds of the flock—on examining the next spring, those still affected, I found them absolutely without teeth—these things brought me to my reflections—I set seriously about the reform, and by degrees adopted the system I have here recommended, with complete success, as may, I am satisfied, any farmer who will be pleased to try it.

A MARYLANDER.

FOR THE AGRICULTURAL MUSEUM.

A few days ago I received the first number of the Agricultural Museum. I was really delighted to perceive the beginning of an undertaking which promises so much utility to the community: and I sincerely wish it all the success and support which it so justly deserves.

It is acknowledged by all, that this country, on account of its great extent, possesses greater advantages and resources than, perhaps, any other. All we want then, is to be fully acquainted with those resources; and in my opinion, nothing can be so conducive to the attainment of that knowledge, as such a periodical work, in which the experience of one man may be instantly communicated to thousands; so that by reciprocal communication, all may be benefited.

Already has a new spirit of enterprize displayed itself amongst us. The quantity of domestic manufactures now made in almost all parts of the country, far exceeds the expectations of the most sanguine. Perseverance will make us truly independent.

It is pleasing to every real American, to observe the ardor which now prevails in this country, to promote the progress of manufactures. Every day we hear of new machines, in all parts of the union, for carding, spinning and weaving. Already have we seen patterns of cloth

manufactured by our citizens, which might vie, for fineness and elegance, with those manufactured in London Sedan, or Elbeuf. In this District, several manufactories have lately been established. A machine for carding, roving and spinning cotton, working ninety six spindles, is now in full operation at the Four-mile-run; besides a Cannon Foundary and Paper Mill near Georgetown, a Glass House and Nail Factory in the City of Washington, and several other establishments of less importance.

I had, not long ago, the curiosity to ascertain the number of weavers in this Town; and after a diligent enquiry, found that there were twenty one looms; sixteen of which were constantly employed, and had then on hand to the amount of one thousand four hundred and sixty yards of different kinds of cloth for family use. They each weave from three to six yards a day, making on an average seventy two yards a day altogether, and allowing three hundred working days in the year, twenty one thousand six hundred yards a year.

Here it is proper to observe, that these looms are all in private families, and all but one worked by women, and that, with one exception only, they use the common shuttle. Several of them informed me that they intended to adopt the fly shuttle; and there can be no doubt, but when once adopted, it will immediately gain a decided preference over the other, on account of the ease and celerity with which it can be worked. I am informed that, besides the public factories of cloth in Washington and Alexandria, there are many private looms in both those places, abundantly supplied with work. I would recommend it to such as may be friendly disposed towards domestic manufactures, to ascertain their number, and, as I have done, publish the result of such enquiries as it may be deemed proper to make. I am persuaded that it will be found that, at least, not a less quantity of cloth is woven in each of those places, than there is in Georgetown—Yet however great the whole quantity may be, it is a certain fact, that, for the want of proper artists, much yarn is sent

out of the District, and even to the distance of many miles for the purpose of being manufactured. Stocking weavers, dyers and fullers are much wanted—Should industrious men, well versed in any of the above branches, come and reside amongst us, any where in or near to the District, they certainly would find as much encouragement as they could wish.

J.

Georgetown, July 11, 1810.

From the Aurora.

In April, 1809, a manufactory of woollen cloth was begun in the vicinity of Newport, Delaware, and there were put in motion one carding machine, two hundred spindles, five broad looms, and one fulling mill, &c. The last year they made seven thousand yards of cloth, which afforded a profit of 25 per cent. on the capital employed—which, including the fixed capital for buildings, amounted to nine thousand dollars—they employ about twenty hands, one half of them boys and children—they have experienced no difficulty in procuring common wool—but fine wool is scarce. The introduction of the Merinos, into the neighbourhood, promises very soon to remove any difficulty on that score. The proprietors expect that by increasing the machinery, and employing a number of country looms, the present year they can manufacture from fifteen to twenty thousand yards of cloth, cassimeres, and cassinets, which will be a sufficient quantity to make a coat for every taxable inhabitant in New Castle county, This for the village of Newport and state of Delaware, you will say is honorable, but it is not all; in addition to these, in two weeks they will have at the same place in operation 240 spindles, impelled by water, employed in the cotton spinning—in the two establishments there will be employed about thirty-five hands—one half of which are children under fourteen years of age—with which they can perform as much labor as would require 600 persons in the common way. Conse-

quently the *high price of labor* cannot affect any such manufacturing establishments, where so much is done by machinery. PEDESTRIAN OBSERVER.

COLUMBIAN AGRICULTURAL SOCIETY.

At a meeting of the Standing Committee of the Columbian Agricultural Society, held at Georgetown on Wednesday the 13th day of June, A. D. 1810, it was determined that the following Premiums be given at the General Meeting of the Society to be held on Wednesday the 18th day of November, viz:

PREMIUM 1—SIXTY DOLLARS,

For the best bull as to form and size, age considered, not less than one year, nor more than four grasses old.

PREMIUM 2—SIXTY DOLLARS,

For the best cow with her first calf, not exceeding four grasses old.

PREMIUM 3—FIFTY DOLLARS,

For the best fat bullock or spayed heifer, for beef.

PREMIUM 4—FORTY DOLLARS,

For the best piece of fulled and dressed woollen cloth, of any width, containing not less than seven square yards.

PREMIUM 5—THIRTY DOLLARS,

For the best piece of woollen kerseymere, not less than ten yards in length,

PREMIUM 6—THIRTY DOLLARS,

For the best piece of cloth, cotton warp, filled with wool to shew the wool on one side, not less, than ten yards.

PREMIUM 7—THIRTY DOLLARS,

For the best piece of fancy patterns for vests, of wool and cotton, not less than ten yards.

PREMIUM 8—THIRTY DOLLARS,

For the best piece of flannel, all wool, not less than ten yards.

PREMIUM 9—TWENTY DOLLARS,

For the best piece of flannel, part cotton, part wool, not less than ten yards.

PREMIUM 10—TEN DOLLARS,

For the best pair of fine woollen knit stockings, of full size.

PREMIUM 11—TEN DOLLARS.

For the best pair of fine woollen woven stockings, full size.

PREMIUM 12—THIRTY DOLLARS,

For the best pair of fine woollen blankets, large size

PREMIUM 13—TWENTY DOLLARS,

For the best pair of fine cotton blankets, large size.

PREMIUM 14—FIFTEEN DOLLARS,

For the best pair of stout coarse blankets, for labourers, full size.

PREMIUM 15—FIFTEEN DOLLARS,

For the best parcel of flaxen or hempen sewing thread made up of three qualities, of at least half a pound each, viz.

One of strong brown, and white brown, two sizes.

One of coloured, of one size, various colours; size and colours as commonly used for family purposes.

And one white, of various sizes, from coarse to fine.

Premium 16—FORTY DOLLARS,

For the best woollen carpet, or carpeting, in the piece, containing not less than thirty square yards.

Premium 17—FIFTEEN DOLLARS,

For the best woollen hearth rug.

Premium 18—TWENTY FIVE DOLLARS,

For the best specimen of durable dye, with the recipe, formed of the productions of the country—best as to strength and beauty of colour, and as applicable to most substances.

Reasonable proof will be required of compliance with the rules of the Society.*

The Premiums will be paid in cash, or in plate of equal value, with suitable devices at the option of the fortunate competitors.

*See Constitution—Articles 8, 9, 10, 11, No. 1 page 10.

Premiums to the amount of at least five hundred dollars will be given at the Spring Meeting of the Society for sheep, and manufactures of cotton, flax and hemp, &c.

The Society at their last meeting have ordered,

1st. That the Standing Committee be directed to give at least two premiums, at the next spring meeting for sheep; one for the best two toothed ram of the fine wooled breed, and another for the best two toothed ram of the long wooled breed. In the first case, the quality of wool is the principal object, in the other, the quantity of wool; but in both cases the judges will take into view every quality which the animals may possess, that render them valuable runs of their respective breeds.

2d. That at least two thirds of the amount of Premiums to be given for sheep, shall be for the long wooled breed.

By order of the Standing Committee.

DAVID WILEY, Sec'ry.

June 19.

From a London Paper, May 6.

Merino Sheep—On Thursday last, a splendid company of Merino amateurs attended the sale at Henbury, near Bristol, of part of Mr. Brooke's Spanish flock of sheep.

Amongst the buyers were Lord Doneraile, Lord Leslie, Lord Ducie, Sir J. Macdonald, Sir J. Dashwood, Colonels Conynghame, Kington and Serle; Messrs. R. Bright, Sheppard, Joyce, Lucas, Hall, Farquarharson, and other amateur breeders. The average prices were higher than at the sale of his majesty's flock; the finest ram was bought by J. R. Lucas, esq. at 107 guineas, a ewe and lamb, by G. W. Hall, esq. at 54 guineas; and some of the finest single ewes at from 30 to 40 guineas.

Lord Somerville's second day's sale of his Merino flock was on Thursday. The following was the result of the two day's sale:—228 Merinos sold for no less than 2210 £ 5s. 6d.

From Kennedy's Sunbury and Northumberland Gazette.

A general abstract of the accounts of the Woollen Factory at Danville on the Susquehanna, from its establishment about the 1st of September, 1809, to the 1st of June, 1810.

Dr.			Cr		
Cash paid for erecting and fitting up the necessary buildings, including the factory house, the fulling mill, two carding machines and picker, and setting them to go by water. Purchasing spinning and slubing and machines, together with all the apparatus of the shops for dying and dressing and finishing the work.		$ 2209. 00	By 112 shares at $ 20 per share $ 2240, of which has been received the sum of		$ 1796. 00
			Outstanding due on sundry instalments whereon part payment has been made		444. 00
					$ 2240. 00
Wool received by purchase, or from shareholders, 2657lb. at 50 cents		1328. 50	Of this manufactured 1685lb.		$ 842. 50
			Remaining on hand	972	486. 00
		$ 1328. 50		2657	$ 1328. 50
Factory Dr. to wool manufactured 1685 lb. cost		842. 50	By 637 1-2 yards made of the coarsest wool and sold to shareholders for		693. 01
To expense of manufacturing		720. 80	By 841 yards on hand, of superior quality, rated at the average price of one dollar and fifty cents per yard,		1261 00
Balance in favour of Factory		711. 86	By carding for the country		140. 83
			By fulling done for the country		180. 32
		$ 2275. 16			$ 2275. 16

It appears that the expenditure for the permanent estate is	2209. 00	By actual receipts of cash as follows, viz.	
And the expence of manufacturing is	720. 80	By cash on instalments	1796. 00
		By do. carding for country	79. 25
		By do. for fulling for do.	71. 61
So that the whole expenditure is	$2929. 80	Balance due the President	982. 94
			$2929. 80
		But to balance in part the above	$982. 94
		Outstanding on the carding account	$61. 58
		And on the fulling account	87. 11
		Also due of instalments as above	444. 00
			$592 69
		At present there is no provision for	$390. 25

Thus it appears that under all the inconvenience of inexperience; the days rapidly shortening; the winter fast approaching; without stoves till near Christmas; and with only one spinning machine till in December, we have struggled on, and at the end of only nine months, in which the whole winter was included, we have made to the company, a neat profit of forty per cent. on the capital, which we think may justly be called succeeding beyond expectation. And we trust we have hereby set an example, amply sufficient to encourage every lover of his country, to abandon all his doubts as to the practicability of manufacturing our own woollens on as good terms, and of as good a quality, as are commonly imported; only let our farmers pursue their interest, as well as their duty, in improving their breeds of sheep, and thus advance the fineness as well as increase the quantity of their wool.

WILLIAM MONTGOMERY.

NEW BRICK MACHINE.

We have seen a model of a Brick Machine, constructed on a new principle, invented by Mr. Daniel French, mechanist and engineer, of this city, and so contrived as to manufacture bricks of all kinds with the greatest facility. It will produce 3000 bricks in an hour, if supplied with clay, and may be extended to produce any number required in the same time. The clay is applied without any previous preparation. It requires only the natural moisture, as it is commonly found a few inches below the surface of the earth. In this state it is applied to the machine, and the bricks are produced in the neatest manner, ready to be piled away; saving the trouble of carrying to and from the yard, and of tending while drying, as is done in the common way. More than two thirds of the usual expence is saved in producing the bricks ready to burn.—The bricks manufactured by the machine are much more compact and impenetrable to water, than brick manufactured by hand; as a brick of the same size will weigh nearly one fifth more than those made in the common way.

Specimens of the brick produced in this way, from several kinds of clay, have been burned, and the result has proved beyond all doubt, that the machine will answer the purpose intended.....*Newyork Evening Post.*

From the Richmond Enquirer.

James River Canal &c.—We inform the people of the Upper Country, that a contract has been made by the James River Company with Captain Ariel Cooley, of Springfield, Massachusetts, with a view of communicating the basin with tide water—13 locks, inclusive of the water-lock, are to be put up—$ 50,000 are to be given for the work, of which 10,000 have been already paid, in part of the contract. The whole is to be completed by May, 1812.

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THE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

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FOR THE AGRICULTURAL MUSEUM.

It is believed that when the census now taking, is completed, the population of the City of Washington, and the two towns in the District of Columbia, will be found to have doubled in the last ten years, unpropitious as these years have been, to the growth of towns depending for their prosperity on that kind of trade, which has for its basis, the products of our own country;—and which are too remote from the sea, to rival towns on the sea-board, in what is called, the carrying trade.

If in such times the increase of population has been so great, what may not be expected, in the next ten years to come, in which, and perhaps in all future times, for at least half a century, it seems more than probable, from the state of the world, we must content ourselves with that trade only, which depends upon our own resources? And it will, I doubt not, be a happy circumstance for the country, if we can bring ourselves to so much moderation, as to aim at no more—indeed, this properly cultivated, will be enough for all our activity, and all our enterprize. In such a state of things, the progress of Washington, and the other towns in the District, will bear some proportion to the magnitude of the back-country with which nature has connected them.

It is well known, that the country west, and north and south west of the District, watered by streams tributary to the Potomak, and affording, for some months in the year, inland navigation for several hundred miles, is certainly amongst the most fertile on the eastern waters; and may be justly denominated the grain country

of the Atlantic States. Extravagant as it may seem, it is nevertheless true, that even at this moment, an equal market price for flour, and grain of all kinds, would attract to the District, more abundant supplies than any one town in the United States annually receives—and for this, there is the plainest reason in the world—because the growers of the article in the largest and finest grain country, would be subjected to less expense in transporting it to the District, than in carrying it to any other market accessible to sea vessels—and this advantage in favor of the district, will become more decisive every succeeding year, as the inland navigation of Potomak, and its different branches, becomes more perfect.

My present object, however, is not to point out the commercial advantages of the situation of the District of Columbia—but rather to call the attention of the Proprietors of the lands in the vicinity, to the importance of making due efforts for their improvement, with a view to the supply of the growing market at their door—particularly, with those articles which either will not bear the carriage, or which, from other circumstances, cannot be so well supplied, from a distance.

The kind of land which more immediately calls for improvement, and which will best reward the labour of the judicious improver, is that, which is now but little better than an incumbrance to the owner, but which is capable of being converted into meadow, at an expence trifling indeed, in comparison with the annual profits it will be sure to yield. Meadow ground, under proper cultivation, is no where so valuable as in the neighborhood of the District—in no other place, is there so great a demand for grass, and all the articles depending on grass;—hence it is, that these articles, so essential to the daily consumption of towns, constantly command prices from 20 to 50 per cent. higher in the District, than in the great markets of Philadelphia and Baltimore—and it need not be apprehended, that the improvement of such land can be too general—or too rapid—no efforts in the

power of the proprietors to make, can keep pace with the still more rapid increase in the population of the District.

Each owner of such land will be able to calculate for himself the expence of laying it down in grass—the profits will probably exceed any idea he may be able to form on the subject, without some knowledge of the value of such lands near other markets. In the neighbourhood of Philadelphia, I am informed, the annual rent of land of this description is from 25 to 30 dollars per acre—the price for the fee, three hundred to four hundred dollars—in the vicinity of New York the prices are not less considerable, and around Baltimore, but little inferior.—Surely this should be sufficient to excite the Proprietors of low lands, near the District, to the most animated exertions for their improvement—Many hundreds of acres are so situated as to be capable of being converted into the most valuable meadow, at an expence per acre less than annual rents near Philadelphia.

A FARMER.

CLERMONT MERINO SHEEP SHEARING.

On the 15th May the sheep shearing of his Merino flock was celebrated by the Hon. R. R. Livingston, at his mansion in Clermont, amidst a large concourse of his fellow citizens.

Farmers from the different districts of the State attended on this occasion. In addition to those who came from the other counties, several gentleman from Albany and New York were present, and connoiseurs from different States of the Union, were observed among the company.

More than usual interest was attached to this exhibition, from the consideration that Mr. Livingston is the person to whom we are indebted for the first introduction of the Merino sheep into the country, and for the first public shearing in the Northern States. The

stock which he originally imported from the national flock of Rambouillet, in France, has multiplied many fold since its introduction in 1801. It is now ascertained by experiment, that this race of sheep will thrive well in our climate. Through a series of generations there is not the least indication of degeneracy; on the other hand, the late cold Northeast storm, during the present month, has afforded reason to conclude that they are more hardy than our common sheep. The wool retains its exquisite fineness, with an increase of quantity, and the excellent broad cloths and kerseymeres which have been manufactured from it, have completely established its character. Henceforward may we look to our domestic supplies of wool for clothing. There is nothing extravagant in the belief, that in a few years the wool of the Northern States will equal the cotton of the Southern: and the foundation is already laid for the entire independence of our citizens on the woollen fabrics of every foreign market.

To encourage the growing spirit of internal enterprize, Mr. Livingston had given an extensive invitation to his fellow citizens. The numerous and respectable body who collected evinced the lively curiosity which was excited. The shearing of the full blooded Merinos, with their different grades, mixtures and crosses, afforded a novel and engaging spectacle. The day was remarkably fine. The shearing was performed in the presence of the spectators, who examined the fleeces, one by one, as they were taken off. And the fairest opportunity was afforded of inspecting, as well the size and figure of the animals, as the weight and fineness of their fleeces.

The results of the shearing were highly satisfactory. Among the facts disclosed during the day's work, the following were more particularly noticed:

The fleeces of the old ram from Rambouillet, and of a young full-blooded ram rising two years old, weighed each nine pounds: the fleece of a young ram rising one year old weighed upwards of eleven pounds; another

ram, seven years old, afforded a fleece of seven pounds and more. The ewes of the whole blood, as well as both rams and ewes of the 15-16, 7-8, 3-4 and 1-2 blooded, afforded fleeces which were truly promising and encouraging.

After the morning exercises were ended, the company partook of a sumptuous dinner, which the generous entertainer had prepared for his guests. The walls and columns of the grand saloon, where the tables were spread, were adorned with festoons and wreaths of arbor vitæ interspersed with flowers. In these elegant ornaments the red and the white roses were happily united. Over the head of the table was placed a correct likeness, by Mons. Bauduy, of the two year old ram called Clermont, represented as standing at pasture: over the middle of the table was inscribed "Success to Agriculture," and at the other end "Success to Manufactures." Plenty and conviviality diffused a smile over every countenance.

It was highly gratifying to observe many of the gentlemen clothed in elegant suits of Merino wool.

Various samples of cloths, made from the same article, were exhibited in the piece, proving the skill already acquired in spinning, fulling, dying, shearing, and the other branches of manufacture.

Many of the citizens present then made their selections from the stock, pursuant to previous contracts, and took their sheep away. Great emulation prevailed in the exercise of their choice; and it was observed that farmers, who had never before listened to the reports in favor of the Merino breed, were now convinced of their superior value, and immediately became purchasers, or gave orders for sheep to be delivered to them on a future day.

The Charleston Bridge, the partial completion of which was celebrated on the 30th of June, was commenced about the beginning of February, when the first pile was driven by Mr. Mills, a gentleman of Boston, who erected

the bridge at Washington. It is built upon 98 sections, each consisting of five piles, is 2187 feet long, and 83 feet wide. The piles are defended from the worm, most of them by lead, and some by copper. There are two side walks, which are to be lighted by forty lamps. The causeway at the extremity of the bridge in St. Philip's Parish is 1300 feet long, at the extremity in St. Andrews, 1800. The last pile was driven on the 28th June, and it is expected that in less than a month from this time the bridge will be open to travellers. It is the first work of the kind ever attempted in the Southern States, and has been perfomed with unprecedented zeal and rapidity, reflecting much honor on the enterprize of those concerned. *Charleston Times.*

AMERICAN MILLSTONE MANUFACTORY.

An extensive bed of Stone has lately been discovered by Mr. Joseph Sigfried, in Allen Township, of a quality superior to the French bur stone.

Two enterprising millstone Manufacturers, Messrs. Spong and Christian of Reading, Berks county, came to view the stone in March last, and prepared and transported to Reading, as many as completed two pair of Mill stones which on trial surpasses even their most sanguine expectation—They have since, at a moderate rate secured for a term of years the valuable part of the bed, and are now working it to great advantage—upwards of sixty pair of these millstones have already been spoken for. *Northampton Farmer.*

PITTSBURGH, (PA.) JUNE 22.

Two hundred Merino sheep arrived at the farm of Brintnal Robbins, one mile from this place, on Wednesday last, from Col. Humphrey's flock in Connecticut. They are offered for sale, or in exchange for cattle or flour. *Pol. & Com. Register.*

The brig Commerce, Bartlett, has arrived at an eastern port from Spain, with 60 Merino shee p.

THE HESSIAN FLY.

"I have noticed in some of our late papers, that the Hessian Fly has again made its appearance in the United States; and that not only in Virginia and some other southern States, but also in some parts of this state, melancholy proofs of the ravages of this devouring insect have been discovered; I have myself also observed, that in the county of Washington, in which I reside, the fly is again desolating the fields of wheat.

"I hope so potent an enemy will not be treated with unconcern and neglect by the friends of agriculture, but that they will unite their experience with their energy to repel and counteract his insidious and baneful influence, and if possible arrest his progress in his first onset.

"The result of my observations respecting the Hessian Fly, when he before ravaged this country, and the plan adopted for destroying him, which appeared to me most effectual, I here subjoin, with a request you will give the same a place in your paper.

"The fly deposits its eggs in the new wheat soon after its springing up in autumn, and before there are any severe frosts; propagates in the spring, remains in a torpid state till sometime after reaping; is invariably found in the first or second joint of the stalk, and taking wings in the course of August. Cut your wheat high, remove it immediately from off the land, and without delay burn the stubble; this destroys the insect while in its torpid state, and if the burning be effectual, cuts off the Hessian Fly root and branch in one season.

"I think I may safely pledge myself to you, that if this plan of cutting the wheat and burning the stubble is universally adopted, we shall hear no more of the Hessian Fly; and that in addition thereto we shall have larger crops of grain, as the burning greatly enriches the land, and has nearly the same effect as a coat of good manure."

Albany Gazette, of June, 1799.

MINES OF PERKYOMEN.

It may be satisfactory to many readers to be informed of the mineral productions of Perkyomen. At first one ore only was found; at present, however, they are numerous. The following catalogue will furnish a pretty accurate account of the ores, stones, &c. which have been found.

1. COPPER ORE.

a. Yellow copper ore.
b. Peacocktail copper-ore.
c Phosphate of copper.
d. Malachite.
e Grey copper ore.
f. Mountain blue copper ore.
g. Oxid of copper, &c.

2. LEAD ORE.

a. Cubic galena.
b. Steel grained lead ore.
c. Carbonate of lead.
d Phosphate of lead.
e. Murio-carbonate of lead

3. ZINC ORE.

a. Yellow blende.
b. Black blende.
c. Calamine.

4. IRON ORE.

a. Iron pyrites.
b. Oxid of iron &c.

The stony productions are numerous; of these we may reckon the following;

1. Quartz, crystalized and amorphous.—The crystals are either pyramids, or prisms with the ends pyramidal.
2. Limestone (primitive.)
3 Argillite.
4. Barytes, combined with sulphuric acid forming baroselenite.

Coal has been discovered in the vicinity of the mine, in strata of argillaceous schist.

Aurora.

MINERAL BLACK.

A black mineral substance, discovered near Nazareth, (Penn.) in very large quantities, proves to be the most valuable and most permanent black paint of any hitherto known. It is prepared in the same manner as other paint; no rains or weather affects it; age increases its permanency, and roofs and boards that were painted with it six years ago are become so hardened as to be bored with great difficulty. For ships, boats, &c. it must be very serviceable. *Boston Centinel.*

CELEBRATION AT HUMPHREYSVILLE.

On the 4th of July, the citizens of New Haven were gratified with an exhibition, which for novelty, utility and patriotism, probably stands unrivalled in the records of all preceding festivals on this memorable day.

The farmers, shepherds, mechanics and manufacturers in Col. Humphreys' employ, having beforehand solicited to be usefully occupied on this day, he proposed a ploughing match, &c. and had them assembled at his farm in Yorkshire quarter, about three quarters of a mile from the state-house. Their emulation was manifested by the early hour of their appearance on the ground.*

At the dawn of the day, in a field of eighteen acres, marked out into lands of one acre each, fourteen ploughs started, each in its own land, according to its number, each being drawn by one pair of horses, oxen or mules. The other four lands were ploughed by teams promiscuously, as they finished their own. The animals, bred principally at the Humphreysville establishment, consisting of horses, oxen, and mules, were generally admired for their beauty, in particular four grey colts from the stock of Col. H's elegant Arabian horse Ranger. The land No. 7, was finished ploughing before 9 o'clock.†—The teams passing and re-passing each other in quick succession, presented the most animated picture of the kind we ever witnessed. Whilst this was performing in one field, the axe-men and carpenters were

* The colonel (as is his usual custom) rose very early, and upon coming to the field, was astonished to find them all upon the ground, and very pleasantly observed that although he was an old soldier, they had this morning stolen a march of him.

† This land was allotted to a respectable farmer, between 50 and 60 years of age, who had walked three miles to his work, and was ploughed by a fine pair of red oxen, the handsomest in the field.

felling, hewing, and framing timber in another, for a shepherd's lodge, which was ready to be raised before noon. His clothiers, paper makers, cloth and stocking weavers, had, during this process, prepared the boards and other covering, which was put on by the appropriate artificers with great dispatch, the painters instantly following them with their brushes.

At given signals the work people ceased from their labours, and refreshed themselves from a neighbouring booth, erected and furnished for the purpose. In the vicinity of the booth, a spot was cleared by the surplus hands for a sheep walk, (to protect them against winter storms) of about 100 feet in length—under this bower a table was laid for 152 persons. The dinner was principally prepared hot on the ground, by means of a portable Rumford kitchen.‡ What added much to the beauty of the general scenery, was the appearance of numerous Merino and other sheep, interspersed among the ploughmen. This flock had been brought from Humpheysville to eat the grass before it was destroyed by the ploughs. About 40 apprentices of the Humphreysville factory, dressed in neat and comely uniform, were employed in collecting materials for manure and other agricultural operations. It ought to be remembred, that, although many of those children belong to respectable families, yet some of them have been rescued from the most unfortunate situations. All were busy without bustle; each at his station, co-operating without noise as if animated with the same spirit Before half past three o'clock, all the processes of ploughing, building, painting &c. were completed—the ploughing had been finished in a very skilful manner, two hours before this time. At the sound of the horn, the work people and a nnmber

‡ The utility of the portable Rumford had not probably been experienced in the field on any previous occasion in New England. Five large puddings, various kinds of both meat and vegetables, were cooked in the boilers and steamers at the same time.

of very respectable farmers re-assembled at the booth, and refreshed themselves with a variety of excellent distilled and fermented liquors. From thence they were invited to sit at the table, which was well furnished with merino mutton, beef, hams, poultry, puddings, &c. the products of his farms. The proprietor did the honors of the table; and the following sentiment alone was given after dinner:—

"INDEPENDENCE. Deeds—not Words—Let those who wish to appear to love their Country, prove it by Actions rather than by Toasts and Declamations."

After dinner the concourse dispersed, much pleased with this new and rational mode of celebrating the Anniversary of Independence, and highly delighted with the perfect propriety of conduct of all present.

ADDRESS

OF THE COMMITTEE OF THE LINNEAN SOCIETY OF PHILADELPHIA, TO THE CITIZENS OF THE UNITED STATES,

ON THE SUBJECT OF THE NATURAL PRODUCTIONS EMPLOYED IN THE ARTS AND MANUFACTURES.

To every nation, it ought to be an object of the first importance, that it should possess within its limits, the natural productions essential to manufactures and the arts.

A nation which depends on another for the supply of its necessary wants, or the materials for its labour, cannot be entirely free. It is placed under such disadvantages, that seldom will it dare to maintain its rights against the aggressions of the government, which commands its supplies.

A large portion of its citizens, accustomed to consider a foreign nation as the immediate instrument of support, of acquiring wealth, or yielding the enjoyments and conveniencies of life, contract foreign partialities and foreign prejudices. They are more connected and more attached by interest to the government, whose

trade maintains, whose manufactures clothes, and whose luxuries enervate them, than to that, which gave them birth, gave them independence, gave them freedom. The short suspension of our commerce taught the American people these truths. It exhibited the inconvenience; it did more, it exposed the destructive evils of a dependance on a foreign government for goods of daily and domestic use. It proved, that to be free, a people should possess not a government and laws of their own only; but, that they must have their own workshops. It shewed that freedom consists not in a mere exemption from political subjection, but also from moral servitude.

In viewing the present zeal for the establishment and promotion of manufactures, every patriot's breast must glow with virtuous feeling. The contention, for so it may be termed; the contention for their establishment, is a strife for the independence of the country. The battles of the revolution broke our chains asunder, but they still cling around us; the spirit of manufactures, is now to cast them from us forever.

To lend their feeble aid in this important endeavor, is the ambition of the Philadelphia Linnean Society; and they believe they can the better accomplish this object, by directing their researches to the discovery, in this country, of those subjects, which, coming under their notice as a society of natural knowledge, are the objects of commerce and the materials of manufacture.

The list of articles of the Materia Medica of the United States, is already extensive and important. Many of its contents supersede in the practice of our physicians, the drugs of Europe and Asia.* By research and experiments, it no doubt could be greatly enlarged and improved to the advantage of the nation, and benefit of individuals.

Our forests yield some plants, which, as dies, for brilliancy and permanency of coloring, are not surpassed

* See Barton's Collection towards a Materia Medica.

by any of South America or India; the number is, however, small, and the range of hues confined.

Our country is prolific of some metals.—Yet antimony and mercury are unknown as its productions Arsenic, cobalt, copper, and the precious metals, have been found in such small quantities or peculiar states, as to render them little valuable or useful.

There can be no reason why all these metals should not exist abundantly in this country. There is every probability they do. The rocks, which are their gangues in other countries, in our own are generally diffused It is indeed, no stretch of credulity to believe that their ores are every day trodden under foot, turned up by the plough or the spade, and thrown away or regarded as useless, from ignorance of their value. Similar cases have been known; of which the following may be cited:

Black jack, an ore of zinc, now largely employed in the making of brass, a few years past was used in Wales, for mending the roads; and the cobalt ores of Hesse, which now yield a neat profit of 14,000 pounds sterling per annum, were formerly employed for the same purpose.†

If ignorance should have caused, in Europe, at a late period, such a misapplication of valuable and productive ores, how very probable is it, that, in this country, where hardly one in a thousand has a superficial acquaintance even with their appearance, they may be in the hands of hundreds; may be used for common purposes constantly, and their importance never suspected.

It has happened, that valuable ores have remained unworked, to national and individual injury, from a just diffidence in the proprietors of expending their money fruitlessly, as they could not obtain a knowledge of their nature and richness.

† Watson's Chymical Essays, vol. 1st, page 45.

Others again, deceived by appearances or the false representations of designing men, have disbursed considerable sums, and wasted much time, in the useless search for metals, when a metallurgist would at once have pronounced that no ore existed, or that it was one too poor to be profitable.

To assist, therefore, in obtaining a full knowlege of the medical and dying drugs indigenous to our soil; to expedite the discovery of useful metals; to aid the manufactures of their country, as far as they are connected therewith; and to remove the inconveniences and disadvantages of individuals not possessing an acquaintance with natural knowlege, the Linnean Society of Philadelphia has directed the undersigned committee to give this public notice, that any plants, ores, or any mineral substance whatever, which shall be forwarded to any member of the committee, shall be examined by the botanical and mineralogical departments of the society. The result of the examination shall be communicated as soon as completed, to the person transmitting such specimens, together with such other information relative to its nature and uses, which the society can impart.

SAMUEL JACKSON,
JAMES CUTBUSH,
SAMUEL BENEZET, } Committee.

Aurora.

KENTUCKY MANUFACTURES.

Extract of a letter from a gentleman in Lexington, Ken. to his friend in Charleston, S. C. dated May 1, 1810.

"Hemp is becoming the grand staple of Kentucky. In this town there are now at work 9 rope walks; each consumes annually one hundred tons of hemp; 4 cotton bagging factories, consumption 50 tons of hemp each; one factory of sail cloth; in the whole about 1200 tons of hemp, prime cost 150,000 dollars, employing 400 hands, principally men and boys, and producing to the

manufacturers great profits. The sail cloth factory is now under engagement to deliver 500 pieces to the government.

"Four factories for carding and spinning cotton; the oldest established here, 200 spindles; the next, one mule of 160 spindles; another one a throstle, with 42 spindles; and the last is now commenced to spin, and is established on the principle of the New-England factories, the proprietor calculating upon putting in motion 1,000 spindles, and has now at work a throstle with 108 spindles; in the course of next month he starts a mule of 204 spindles. The establishment has already cost upwards of 20,000 dollars in lots, buildings, machinery, &c. and will progress gradually, as the machinery can be made till 1,000 spindles are in motion. The machinery is all made here; the cotton yarns are sold to the country, except what is manufactured in town, into bedtickings, cords, jeans, chambrays, and plain goods.

"There are three wool carding machines and one for spinning. We supply a part of Tenessee, Ohio and upper Louisiana, with hats, boots, and shoes, and manufactured cotton and linen; we have excellent white and black smiths, cabinet makers (our cherry tree furniture far surpasses in beauty the mahogany) fancy and windsor chair maker's, fancy chairs as high as seven dollars each, three carriage maker's shops, with numerous others of the different employments. Our buildings are of good coloured brick, put up in good style; plenty of the most beautiful white and variegated marble; footways neatly paved with brick, and the middle of the street with solid stone, firmly bedded.

"Our exports are hemp, bale ropes, hempen yarns, twine, fishing lines, seine twine, cables, tarred ropes, white work generally, cotton bagging, sail cloth, manufactured tobacco, salt-petre, gun powder, crop tobacco, about 3,000 hogsheads yearly out of the Kentucky river; beef, pork, lard, tallow, candles, whiskey, 200,000 gallons sent down the river yearly; flour, beans, pota-

toes, horses, bacon hams, &c. We have two small banks, that do considerable business; the insurance office, capital 100,000 dollars, solely employed in discounting and dealing in exchange to the eastward, divides ten per cent. per annum for the last five years; the other a branch of the Kentucky bank, capital 70,000 dollars makes ten per cent. per annum."

INLAND IMPROVEMENTS.

The following gentlemen, to wit, Governeur Morris, Stephen Van Rensselaer, De Witt Clinton, Simeon De Witt, William North, Thomas Eddy, and Peter B. Porter, appointed by the Legislature of the State of New-York, at its last session, to explore the most practicable route for improving the Inland Navigation from Hudson's river to Lake Ontario and Lake Erie, have already entered upon the duties of their appointment; an appointment, which in its result, promises the highest and most important advantages to the community.

N. Y. Paper.

KEENE, (N. H.) JULY 14.

The Season.....From all quarters we have the most flattering prospects of a goodly crop the ensuing harvest. We have been seldom favored with such a constant succession of sunshine and showers. Indian corn, in general never had a better appearance. The crops of hay will be at least middling, in addition to which is a considerable supply of old hay on hand. In some places clover and English grain have been winter killed; but on the whole, the tillers of the soil have much cause to rejoice and be glad.

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THE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

Vol. I.] *Georgetown, Ca. August* 15, 1810. [No. 4.

The *Columbian Agricultural Society* have received from the Honorable Mr. SMITH, Secretary of State, a late and enlarged edition of Lord SOMERVILLE's *Essays on Husbandry*, presented in the name of the Author.

This very valuable book treats at large of *Sheep* and *Wool*—of the relative merits of *Draught Cattle*, and of *Implements of Husbandry*—and contains a *Record* of Lord Somerville's celebrated *Cattle Shows*—from their origin in 1802, to and including the year 1809.

FOR THE AGRICULTURAL MUSEUM.

Roads and Inland Navigation.

Among the numerous majestic rivers of the United States, the Potomak holds no inferior rank. It takes its rise in that great chain of mountains which separates the Western Waters from those that flow more directly into the Atlantic; and, after having marked the boundary between Virginia and Maryland for above 300 miles, discharges itself into the Chesapeake by a mouth more than seven miles in width. It has tide water sufficient for sea vessels nearly half its whole length; and is navigable for boats to Westernport, within a short distance of its source. The little or lower falls are in the District of Columbia. Merchant ships of the largest size, can come up, without difficulty, to the city of Washington—a point farther into the main land, and more distant from the Ocean, than any other in the United States, to which ships of such burden can navigate with ease. No streams of considerable magnitude unite with it, be-

low the highest point of ship navigation—nor are there any towns on its banks, worthy of notice, below Alexandria. Its whole foreign commerce is, and must continue to be, carried on through the Ports of the District—they can have no rival in this respect—they occupy, not only, the most advantageous scites, but the only ones on its margin, at all convenient for intercourse with any considerable portion of the country. It is true, the towns in the District have stood too much in the attitude of rivals to each other—Although, taken together, they have not heretofore, been capable of forming a sufficient centre of attraction, if the expression may be used, and of affording sufficient capital, to command all the internal commerce to which their situation hath given them an incontestible claim; yet, instead of uniting in their exertions to open and secure the means of intercourse with that vast extent of country to the North and West, which would have afforded to them the most ample resources for trade and commercial enterprize, they have stood aloof from each other—they have indulged unreasonable jealousies and wasted their powers in unavailing attempts to draw for each other, that comparatively, speaking, pittance of commerce and country produce, to which nature in her rudest state has given them access—The great interests of the whole have been too much sacrificed to the petty quarrels of the parts. When just views of things ought to have dictated the adoption of every measure calculated to draw closer the bonds of union and thus give triple efficacy to their exertions, their policy, it would appear, has been to divide the three-fold cord—to disclaim connection with each other; and, if possible, to preclude all intercourse by impassible barriers.

Recently, however, they generally begin to discover the true source of their real and substantial interests; and to see, what a few men of more enlarged and liberal minds always saw, that to promote those interests most effectually, they must abandon their idle disputes, and unite

in their exertions to facilitate and extend communication with every part of the country around; and especially with those vast fertile tracts which are watered by the widely spreading branches of the upper Potomack, whose industrious and wealthy farmers must ever look on the Ports of Columbia as their natural Emporium—And not only these,—the people of the whole western country, on the Ohio, on the Mississippi, and, even, on the Missouri and the Lakes, have their eyes directed to the navigable waters of the Potomak, as likely to afford them the most easy and direct avenue for intercourse with the Atlantic. New Orleans, without doubt, will be the great Depot for most of the heavy and bulky products of all that vast region; but when the United States' road from Cumberland to Wheeling, and others to different points on the Ohio, are opened and made, and when the improvements now contemplated, on the boatable waters of the Potomak, are fully effected, many articles of the lighter native products of that country, would find a more certain and more profitable market in the District of Columbia, were even her present means brought to act in concert; and almost the whole supply of foreign merchandize requisite for the rapidly increasing population of all that immense territory, which lies to the North of a line of latitude, drawn through the month of the Ohio, would be borne to them from the Potomak, with more expedition and less expence than by any other channel.

In his notes on Virginia, Mr. Jefferson observes, that 'the Western Waters have three principal connexions 'with the Atlantic; the Hudson's river, the Potomak, 'and the Mississippi itself.* Down the last will pass 'all heavy commodities. But the navigation through

* In the appendix (A) two others are noted; one from Presque Isle on Lake Erie to Le Bœuf, down the Allegany to Kiskiminitas, then up the Kiskiminitas, and from thence, by a small portage to Juniata, which

'the gulph of Mexico is so dangerous, and that up the 'the Mississippi so difficult and tedious, that it is thought 'probable, that European merchandize will not return 'through that channel. It is most likely that Flour, 'Timber and other heavy articles will be floated on 'rafts, which will themselves be an article for sale, as 'well as their loading, the navigators returning by 'land or in light batteaux. There will therefore be a 'competition between the Hudson and Potomak ri-'vers, for the residue of the commerce of all the coun-'try westward of Lake Erie, on the waters of the 'Lakes, of the Ohio and upper parts of the Missisippi."

'The Potomak offers itself under the following cir-'cumstances. For the trade of the Lakes and the wa-'ters westward of Lake Erie; when it shall have en-'tered that lake it must coast along its southern shore, 'on account of the number and excellence of its har-'bors; the northern, though shortest, having few har-'bors and those unsafe. Having reached Cayahoga, 'to proceed on to New-York, it will have 8.5 miles and 'five portages; whereas it is but 425 to Alexandria, 'its Emporium on the Potomak, if it turns into the Cay-'ahoga, and passes thro' that, Big Beaver, Ohio, Yoho-'gany, (or Monongahela and Cheat) and Potomak; and 'there are but two portages; the first of which, be-'tween Cayahoga and Beaver, may be removed by 'uniting the sources of these waters, which are lakes in 'the neighbourhood of each other, and in a champaign 'country; the other from the waters of Ohio to Poto-'mak, will be from 15 to 40 miles, according to the trou-'ble which shall be taken to approach the two naviga-'tions,† For the trade of the Ohio, or that which shall

falls into the Susquehannah; the other from Lake Ontario to the east branch of the Delaware, and down that to Philadelphia. Both are said to be very practicable.

† On the line of the new road from Cumberland to Wheeling, the navigable waters of Monongahela and Potomak are distant about 70 miles.

'come into it from its own waters or the Mississippi; 'it is nearer through the Potomak to Alexandria, than 'to New-York, by 580 miles, and it is interrupted by 'one portage only."—It is also observed, that the rout by Potomak is less liable to interruption by ice, or by wars with our neighbours, the Anglo-Americans, or the Indians, than that to New-York, which is our frontier on the north through almost its whole length.

These observations derive additional weight and importance from the circumstance, that goods are, at this time, in the present state of the river and roads, frequently boated up from the District of Columbia to Cumberland, and taken from thence to the Western Waters, at a lower rate than they could be taken there from any other sea-port. Col. Lyon, a member of Congress, for several seasons past, has taken large quantities by that rout to the Western Country—Goods have, last summer, been sent by General Mason, the Superintendant of Indian Trade, from Georgetown to St. Louis on the Mississippi, near the mouth of Missouri, for a less price than they could be taken by waggons from Philadelphia to Pittsburgh—and Furs and Peltry have been brought from thence to Georgetown to greater advantage, than if they had been taken to market by way of New Orleans, enveloped in the moist atmosphere of the Mississippi and the Gulph of Mexico.

These are facts of no trifling moment—they afford the strongest inducements to the people of the District, and to the farmers and holders of real property on or near to the waters of Potomak, and on or near to the roads leading from those waters to the Western Country, to unite in their exertions to extend and complete the avenues of intercourse, which promise such important results. Roads, canals and navigable rivers, are the arteries and veins that give life and vigour to industry. They are of the utmost utility both to the merchant and to the farmer; but especially to the farmer; as the produce of the country which is carried to market,

is generally of much greater bulk and weight than the merchandise which is taken back in return. From just views of their true interests in this respect, the Eastern and Northern States have, for many years past, been making the greatest efforts to improve the navigation of their rivers, and by canals and turnpike roads, to afford to every part of the country, the most complete means of communication with their commercial towns.

Notwithstanding her distant position and the embarrassments of her rout, New-York has preoccupied a very considerable portion of that internal commerce which has its natural course along the waters of the Potomak, and a very respectable exploring party of her citizens is now out, to devise the means of extending her grasp. Nor has Pennsylvania been an idle spectator. By means of her turnpike roads, which she is pushing on even to the Ohio, she has engrossed a still greater share of the Western Trade. Independently of the commercial advantages which have resulted from such public spirited and well directed measures, other important consequences have resulted. The face of the country has been improved and beautified—the population has been vastly increased—and the value of real property been greatly enhanced.

It is pleasing to observe that some thing of the same spirit has recently been gradually, though slowly, progressing to the South and West. The legislature of Maryland have lately manifested a just discernment of the true interests of that important state—The city of Baltimore is making efforts worthy of her rapid increase in wealth and population. The advantages accruing to the farmers in the country, from the turnpike roads which she is extending, in various directions, towards the North and West, are daily dissipating the prejudices which had been imbibed by clownish ignorance, and were fostered by sordid rapacity. Experience is teaching them that what they had dreaded as bringing ruin

to their property, has, not only, rendered the transportation of their produce to that great and growing Emporium of commerce, much more easy and less expensive than formerly, but has contributed greatly to the value of their lands.

She too hath put in her claim to participate in the trade of the West—and her claim will be heard. The resources, the liberality, the enterprize, of her citizens will ensure its validity. Nor is there any reasonable ground of jealousy between the ports in the District and Baltimore—Her interests, as far as they relate to the Western Country, are intimately connected with theirs. Indeed the greater part of the Western Trade, of all the ports on the waters of the Chesapeake, if not ultimately of the Delaware also, must concentre at Cumberland on the Potomak. From thence it must proceed by the same routs in its progress to the waters of the West. From that point westward, the opening and improving of the publick highways, will result from the united efforts of the whole, aided by the powerful co-operation of the Western States. What, principally, remains to be effected by the citizens of the District, and the people resident on the Potomak and its waters, in order to enjoy a very great share of this valuable trade is, to complete the navigation of their own river, and to cultivate among themselves the most perfect harmony and co operation in all their commercial speculations; especially in those directed to the West. The towns in the District must act as a whole, not as distinct parts having separate views—for their great and all important interests are the same. They should cling together and mutually aid and support each other. Union will give energy and effect to all their operations. For this purpose every avenue of intercourse with each other, should be rendered as easy and as complete as possibe, that they may be able to communicate with facility and expedition and draw from each other, whenever requisite those supplies that may be necessary for their several customers.

The adjacent states still continue their parental regard—They have not yet withdrawn their fostering hand—They had, heretofore, incorporated a Company with extensive powers, to improve the navigation of the upper Potomak and its branches—they had subscribed and contributed largely to the stock of that Company—and, during the last winter, the Legislature of Maryland, with a truly laudable liberality, have authorized the raising of 300,000 Dollars by Lottery, to be expended, under the direction of that Institution in more completely effecting the objects of their association.—Still it remains with the people themselves, to determine whether they will profit by a boon so bountifully bestowed. If lotteries, which it must be acknowledged have become too common, are in any case admissible, it must be to effect an object so important—It cannot therefore but be confidently hoped, that the good people, whose estates are to be increased in value by the expenditure of so large a fund, and whose produce is to be borne to market on the Potomak and its branches, the Monocacy, the Shenandoah, the Conococheague, the South Branch and their numerous tributary streams, will manifest a knowledge of their own interest, a liberality and a public spirit, not inferior to those manifested by their brethren of Pennsylvania, New York and the Eastern States.

VIATOR.

To the Editor of the Agricultural Museum.

SIR,

Being a Member of the Columbian Agricultural Society, and having received the two first Numbers of your periodical Paper, the Agricultural Museum, with which I am pleased, as I think every genuine American ought to be, having for its object the promotion of American manufactures, I take this opportunity of stating to you my first attempt at making cloth for my own

personal use, and my success in that undertaking, in my own family.

I commenced by taking ten pounds from my stock of wool, after washing. A difficulty occurred of which I was not aware, in assorting the proper wool for the better kind of cloth; and which I have since learned to avoid, from your "Five minutes reflections on Sheep," which states, that the wool ought to be assorted, while in the fleece, and before it is washed; but, being then a novice in the art of manufacturing, I had every thing to learn. A coat, however, I must have.

The wool being assorted, it was put into the hands of negro women to spin, who, I have no doubt, did their best; but, when done, it did not look well, on account of the difference in the wool; some fine, some coarse; some from young sheep, and some from old: but, having taken great precaution in breaking and carding, to mix the different kinds of wool thoroughly, so as to prevent its drawing up after weaving, which is the case generally with country made cloth, we had succeeded better than was at first supposed; as no signs of puckering appeared in the cloth. The yarn being ready for the loom, I had it wove by a young woman, in the neighborhood [Miss Edwards,] having then no weaver of my own. Some difficulties arose on account of its width, five quarters. However it was woven of this width, and well done, considering it was her first attempt at cloth for fulling. The 10lbs. of wool turned out 31 1-2 yards. It resembled from the loom, coarse flannel. I then hastened it to the fuller's, [Mr. Jacob Divenhoven] near Fredericktown in Maryland. He fulled, dressed, and dyed it a Navy Blue. The 31 1 2 yards turned out when finished 21 1-2 yards, having shrunk about one third in length, and from 5-4 to 3-4 in width, as may be seen at my Taylor's shop in Georgetown [Mr. Calder] who has had some offers for it, to purchase; but not being for sale, a remnant of it still remains there. I

have had two coats and my son one out of the 21 1-2 yards. I never wore a more pleasant cloth, nor any cloth with more credit, it having generally passed on me as British cloth, the only mortifying circumstance in the case, as I wished it to be recognized *Homespun*, as well on account of its manufacture, as its cost.

The following is the exact account of the raw materials and labour had thereon, with the prices annexed.

10lbs. of common wool, at 40 cents,	$ 4.00
Spinning 10lbs (common price) at 20 cents,	2.00
Weaving 10lbs. of yarn into 5-4 cloth 1s Maryland money, 31 yards,	4.20
Fulling, Dressing and Dying 21 1-2 yards navy blue,	5.37 1-2
	$ 15.57 1-2

And $ 15.57 1 2 divided into 21 1 2 parts makes the cloth stand me in 72 cents per yard, for which $ 5 per yard could have been obtained. I have worn scarcely any other cloth coats for these two years past—it wears well, and retains its colour unfadingly. From my success in this piece of cloth, as you may imagine, I have done giving 8 and $ 10 per yard for foreign cloths, and fondly hope my countrymen will follow this laudable attempt at independence. Thus, may the whole body of our militia be uniformly clad in homespun for five dollars per man, and much less too, with the aid of wives and sweethearts.

RINALDO JOHNSON.

Aquasco, Md. July 30th, 1810.

Pennsylvania Turnpike Roads.

The friends to the prosperity of Philadelphia, must be much gratified with observing that we are at length awakening from the apathy in which, without an effort to counteract them, we have hitherto permitted the very laudable spirit of emulation on the part of our fellow ci-

tizens of New York, Jersey and Baltimore, to push turnpikes into the most fertile parts of our state, and draw off our own produce for the aggrandizement of their respective Capitals, and with it, the attachment of our citizens, to the manifest injury of our political harmony.

A number of facts are stated in your paper of Saturday, which shew that exertions, promising to be effectual, are making, to keep the produce in the neighbourhood of the Conewago Falls, to its accustomed destination at Philadelphia, instead of taking the new route our neighbours of Baltimore have prepared for it.

It is satisfactory to be able to state facts also, which shew, that exertions are making in another quarter, to arrest the produce of the east and west branches, immediately at the head of the difficulties in the Susquehanna navigation, and to obviate the necessity of descending within the influence of our enterprising neighbours.

It is a fact, that a turnpike is now made from Sunbury to Reading, except the space of sixteen miles, which will be completed this year, the funds being all provided.

It is a fact, that a turnpike has long been made from Philadelphia to Perkiomen—and it therefore necessarily results as a fact, that there remains only the space from Perkiomen to Reading, to complete a turnpike from Philadelphia to Sunbury, a distance of one hundred and thirty miles, in the direct diagonal and consequently shortest route to Presque Isle on Lake Erie, and, as is believed, the easiest practicable route to Pittsburg.

It is also a fact, that an act passed the Legislature last session, to incorporate a Company to turnpike the interval from Perkiomen to Reading, and that the Commissioners are now exerting themselves to complete the subscription for the stock, so as to enable the Company to make their contracts this fall, that materials may be prepared through the winter for commencing the work with spirit in the spring.

While we are on this subject it may be well to state some of the peculiar advantages of this undertaking, both as it respects the public benefit, and the interest of the Stockholders individually.

As has been before observed, it is on the grand diagonal shortest possible route from Philadelphia to Lake Erie, intersecting the Susquehanna below the confluence of the east and west branches, and is believed to afford the easiest practicable route to Pittsburg. It therefore will accommodate, more effectually than any other can do, the whole of our State Territory, drawing to itself, by branches, northeastward, and by the eastern branch of the Susquehanna, most of the produce which our brethren of New York and Jersey have, by anticipation, already appropriated to their own use, from the counties of Wayne and Luzerne, and the neighbouring parts of New York State; in its direct route, progressively to the Lakes, and by the west branch, accommodating Northumberland, Lycoming, Tyoga, Butler, M'Kean, Warren, Erie, Crawford, Jefferson, Clearfield and Centre counties, and by a branch southwestwardly to Pittsburg, which is contemplated through Aaronsburg, drawing the trade from the southwest corner of the state, from the sphere of Baltimorean influence, and fixing it with its ancient and best friends on the banks of the Delaware.

Thus much respecting the general effect of completing this grand chain of communication, this Bond of State harmony and prosperity: As respects the interest of the Stockholders, in the small connecting link now proposed from Perkiomen to Reading, an actual experiment has been made by a Toll Bridge over the Manatawny, which, on an average of three years, neated a sum amounting to more than six per cent on the average cost of any five miles of the road, taking at one third more than the actual cost of the Downingston and Euphrata Turnpike.—Judges who have a knowledge of both routes think it will not cost so much.

The subscriptions to this object, in its consequences compared with the cost, perhaps the most important of its nature that can be proposed to the citizens of Philadelphia, are now progressing, so as to justify an expectation that a considerable part, if not the whole of the road from Perkiomen to Reading, may be completed the ensuing season, which will then give a connected line of 130 miles to Sunbury.

American Daily Advertiser.

DOMESTIC MANUFACTURES.

We have seen with pleasure a Report from the Committee of the "Maryland Association for the encouragement of Domestic Manufactures."—This association, says the Whig, is a Society formed in Baltimore city and county, for encouraging domestic manufactures, particularly those of cotton, linen and woollen;—the members, near 2000 in number, having *subscribed* articles of agreement not to wear foreign cloths, or use other foreign articles; provided good substitutes could be produced at home.—The facts detailed in this Report are of the most auspicious character.

Various institutions for the spinning and weaving of cotton, are on foot, near Baltimore. The Union Manufactory on Patapsco, has a capital of one million dollars; and will have from 6 to 8 thousand spindles, 800 of which are now at work. The Company prepare all their own machinery.

E. & I. Levering and Co's. factory, on Gwynn's Falls, has a capital of 200,000 dollars; and will have 5,000 spindles in operation in August next. It will go extensively into the corduroy, thickset, and velveteen wares.

The "Washington Cotton Company," on Jones's falls, have a capital of 8000 dollars, and 1000 spindles in motion; with which they spin 2000 hanks of yarn per week, from No. 8 to 30. They have a dye house, and 7 looms

for cords, twills, stripes, chambrays, ginghams, sheetings and shirtings.

There is a Calico printing and dying factory, on Gwynn's Falls—and a manufactory of Hats and Bonnets, belonging to a Mr. Cartee, of the town of Baltimore.

Besides these larger establishments, there are more than 50 looms in and near the town, employed on summer cotton ware.

The woollen manufactory on Jones's Falls, is greatly enlarged and improved.

The Domestic Warehouse and other stores in Baltimore, have now for sale the following wearing articles of home manufacture, drawn from various parts of the Union; viz. Flaxen and tow linen; cotton sheeting and shirting; printed calicoes, shawls and handkerchiefs, cotton and linsey stripes; chambrays; Virginia cloth; bed-ticking and coverlids; cotton yarn and thread of various kinds and colours; sewing silk and cotton; coatings, coarse and fine cloths; cassimeres and cassinets; morocco hats and caps; buckskin breeches, pantaloons and gloves; hosiery yarn and shoe thread; cotton and thread hose; ladies' hats and bonnets, &c.

Exclusive of the foregoing manufactures, there are others, which have attained considerable perfection at Baltimore. There is one paper mill, which has a capital of $40,000; which makes 12,000 reams per annum—another, with a capital of $70,000, makes 40,000 reams. Two gun-powder mills, whose capital is $160,000, that make 62 quarter casks a day. A spade, shovel, and hoe manufactory, whose capital is $8000; that is said to make 8 doz. of spades and shovels per diem. The glass works of Mr. Frieze, capital $40,000, annually producing 3,400 boxes of glass, each containing 100 square feet. The type foundery of S. Sowers & Co. capital $10,000, that casts from 12 to 14,000 pounds of type per annum—Not to speak of the paper-hanging factory of Thomas and Caldcleugh—or of the slit-

ting iron, rolling and nail factory of Ellicott & Co. on the Patapsco, with a capital of $ 50,000.

From these facts, the Committee do not hesitate to infer, "that the Report of the Secretary of the Treasury must fall far short of the real progress made, and of the capital embarked in domestic manufactures through the Union."

We in Virginia, are behind our sister States of the north—in this patriotic career. But the good work has commenced. Spinning machines on a small scale, are winding their way into the counties, to the South and West of us. The "Swift Creek Cotton Factory," within a few miles of Petersburg, has 300 spindles in motion, and in a few weeks will have 300 more—exclusive of some preparatory machinery, on an improved plan. *Enquirer.*

Extracts from Lord Somerville's Essay on Sheep.

With a view to the improvement of our Short-wool Sheep, and those more particularly belonging to our mountainous districts, hitherto neglected, I have thought it a duty incumbent on me to call the attention of my countrymen to this point, and have therefore ventured to publish a short essay on a subject, which every man, at all acquainted with rural or political economy, must admit to be of the utmost importance.

The breeds of sheep in this kingdom may be arranged into two classes; those which shear the short, or clothing, and those which shear the long, or combing wool; of the former we have specimens in the South Down, Hereford and Norfolk breeds; and of the latter in the Lincoln and Leicester. The quantity of flesh in each class, follows the character of the wool; the short woolled sheep being close in the grain as to flesh, consequently heavy in the scale, and high flavoured as to the taste; the polled long woolled sheep, more open and

loose in the grain, larger in size, "manufacturer's mutton," fit for such markets as supply collieries and shipping; but by no means, generally speaking, of such ready sale.

Notwithstanding the great importance of the short-woolled sheep to the nation, the whole attention, both of farmers and breeders has, for these thirty years past been absorbed in carrying to a degree of perfection hardly credible, the heavy long woolled sheep; such as Lincoln, Cotswould, Romney Marsh, and new Leicester, but more particularly the last.

To such extreme perfection has the frame of this animal been carried, that one is lost in admiration at the skill and good fortune of those who worked out such an alteration. It should seem, as if they had chalked out on a wall, a form perfect in itself, and then had given it existence. Nay, fresh technical terms have arisen to express points in those sheep, thirty years ago unknown; such as the "fore flank," and the "cushion," terms universally admitted.

Such is the animal now: almost the reverse of what it was; and from whatever source it originated, whether from the care and nice observation of breeders, or from crosses with Ryeland or Dorset flocks, is immaterial. Wherever land is deep and strong enough to bear long-woolled sheep, there let them be bred; but let them not be foisted by false arguments on land unable to maintain them; by doing so the public is most essentially injured. Our combing and coarse wool manufactures must be supplied, and therefore our strong land should be allotted to carry coarse, heavy sheep; but if on the same false principle, one is to be pushed every where, to the exclusion of the other, I, for one, am old fashioned enough to prefer clothes to carpets, a necessary to a luxury.

To be continued.

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THE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

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Extracts from Lord Somerville's Essay on Sheep.

Continued from page 64.

No desire of change, or love of innovation, led me to abandon the long-woolled sheep of my own neighbourhood, the Bampton breed dashed with the new Leicester; an undoubted improvement was visible from the introduction of the new Leicester; but there was a prejudice so strong among our butchers against the latter breed, that we were compelled to look to Bristol market for purchasers, at the distance of fifty miles from home. This stock continued to decrease in size considerably, in spite of all attempts, consistent with profit, to maintain it, notwithstanding fresh rams were three times brought from Leicestershire in the twelve years these sheep were in my possession; the loss of size in each four years, amounted nearly to five pounds per quarter. It will naturally be asked what sort of poor hungry soil this must have been, which could not maintain such sheep? It was the vale of Taunton, proverbially known to be one of the most fertile spots in this kingdom, and much of the grass land, in which these sheep were depastured, was equal in strength to any in the vale.

A man must be blind who could withstand such evidence as this. Nature pointed out that the stock was too coarse in quality, or our climate unfit, it matters not which: the fact was plainly marked, and it was merely an act of common prudence to follow her dictates.

These sheep were sold; and the same land, which carried forty-five breeding ewes was immediately

stocked with one hundred and fifty Ryelands in their stead. The neighbours said they would all be starved; the winter was severe, but the ewes maintained themselves moderately well, and their lambs, at weaning time, were in the very best order. The ewes were depastured on the high lands, west of the Vale of Taunton, during the succeeding summer, at the rate of ten per acre, and came back into the Vale in good store state. One lot of these two-tooth sheep was bought by a farmer in the neighbourhood, and put in turnips; between Candlemas and Lady-day they were all killed; and on an average they turned out more pounds of rough fat than they were pounds per quarter. Land of the Vale of Taunton might have supported coarse-woolled sheep in size, had they been pushed in first year's grass, or buried in red clover up to their knees, and the refuse mown afterwards for hay; but this was buying a good thing too dear; it is not the size of individual sheep, but the quantity of good meat and wool per acre which must enrich the farmer, and feed the public; and we wish to impress him with the conviction, that no breeds of sheep should be carried into districts ill adapted, both as to soil and climate, to receive them; that, in exertion to improve the carcass, he should not forget there is such an article as wool; and that the breed of sheep which, on any given quantity of land, carries for a continuance the most wool, as well as flesh, and both of the highest quality, is that breed to be preferred, of whatever description it may be, or from whatever country it may come.

It is to be lamented that we have been such slaves to size, and that the eye can hardly resist it. A medium is most desirable; but, if extremes are to be admitted, without a doubt the small sheep, fine in its grain, is a more marketable commodity. The rich will have it, because its quality is superior; in short because it eats better; the poor man will find its joints more adapted to the strength of his purse; and the dearer meat is to be, the more this argument applies; for legs and shoulders of mutton can-

not conveniently be cut, and retailed in pieces. There remains, then, but the manufacturer, the mechanic, and the middle class of housekeepers, to prefer coarse-grained meat. So we reasoned when we first sent this Ryeland mutton to market; but these were the very people who greedily bought it at a penny per pound advance in price, and that too in a manufacturing district. But we are told, that sailors, colliers, and keelmen, are sure customers for these over-fat joints; so they are, and long may they enjoy them! Fresh meat is fresh meat to a man coming from sea; but if he stays long in harbour, and were once to break pale, and get a taste of better mutton, perhaps it would be no easy matter to bring him back again.

We are told, too, that coarse fat mutton is best for salting; mutton is not at all well suited to this purpose; beef and pork take salt better. If men are to be kept on salt meat, be it so; if they are to live on mutton, let that be good in quality. One of the first cutting butchers in London has often been heard to say, that he could not afford to buy fat coarse-grained sheep; for that, besides the loss in spine fat, which he was obliged to cut from roasting joints, there was not lean enough to support the fat, which therefore roasted away; and that so long as meat bears a better price than tallow, so long he must deal in South Downs, and sheep of that description.

In pursuance of the object stated in the commencement of this Essay, the improvement of the fleece of our Short-Woolled Sheep, the author, in the spring of 1802, made a voyage to Spain, for the purpose of bringing home a flock of Spanish sheep. This attempt is not easily accomplished at any time, but is more than commonly difficult in a time of war. It was an object, not only to attain the sheep themselves, but the whole system of management adopted by those who had the care of these flocks in Spain. In both these particulars, the author has been fortunate enough to succeed. The sheep were selected from a Trashumante, or travelling Merino

flock, of undoubted high blood.§ The rams, twelve in number, were picked from a flock of two hundred; for, except the Manso, or bell-wether, the males are left entire, on a presumption that they carry more wool than wethers, and equally fine. The couples (ewes and lambs) were selected from a number proportionably large. Of the high blood and quality of this flock, the admiration of those shepherds, through whose flocks, twenty-two in number, they passed in the course of their journey, about the end of March, was sufficiently indicative, if not otherwise established. Of their properties as to carcass, and, which is equally material, their power of living hard, so as to carry much wool and flesh on a small surface of land, it will be as well to draw a conclusion from fact, rather than from assertion. That must not be deemed a bad breed of sheep, which, after a trial of some centuries, can maintain its high quality of wool, making two immense annual journeys, and in a less space of time than could well be supposed, more especially when we recollect that the first journey commences when lambs are four months old, or even less. There are few breeds in this country that could support such periodical marches for any length of time, and not suffer materially in the form as well as quality of the carcass, for both are inseparable, being, as before observed, fed from the same sources.

To be continued.

§ The Flocks bearing fine Wool in Spain, are distinguished by the appellation of Trashumante; and so called from travelling from one end of the kingdom to the other; wintered in Estramadura, and other warm provinces; during the summer months they graze on the mountains of Castille, Leon, and Asturias. On the contrary, those flocks which are always stationary, are, for that reason, called Estante, and belong to the provinces of Estramadura, Molina, Cordova, & other districts.

ON THE PROPER KIND OF SEED WHEAT AND THE CAUSES OF SMUT AND OTHER DISORDERS TO WHICH THAT GRAIN IS LIABLE.

By Sir John Sinclair, Bart. President of the Board of Agriculture.

There is reason to believe, that the practice of using young seed, instead of old seed has greatly contributed to occasion the smut, and the other disorders to which that grain is liable. Any thing that weakens the plant must sooner or later be the parent of the disease. Now, young seed germinates immediately, and the flower it

contains is not so thoroughly ripened; hence the young plant must be weaker; Whereas, old seed lies a considerable space of time in the ground before it germinates; takes a stronger hold of it: the flower by which the young plant is at first sustained is in more perfect state; and the plant itself being stronger is consequently less liable to disease. In men and other animals, gradual growth is a great sign of health and longevity; and why should not the same principle extend to vegetables? It is observed, that the fine thin skinned American wheat, is very apt to suffer by the mildew, owing it is supposed, to the same circumstances, of early or too rapid germination.

It is probable, that the practice of using young seed, might be introduced in times of scarcity, when the high price tempted the farmer to dispose of the whole of his old stock. Its speedily appearing above ground, might be an argument in its favor adverting to the after consequences, which might not be observed at the time, or attributed to other causes. I am informed, that a Mr. French of Ballirica, who farms in the hundreds of Essex, constantly uses old wheat; in that respect imitating the example of his father, who was led to the practice by finding that old seed was in general cheaper than new. It is said, neither he, nor his son, ever had smutted wheat; and their crops have always been remarkably good. In their practice, provided the seed was sound and sweet, size or bulk was not much regarded; age being the principal object attended to.

These observations are made for the purpose of calling the attention of farmers to so interesting a subject of inquiry. It is to be hoped, that many experiments will be tried, in various parts of the country, for the purpose of ascertaining an important fact, whether new or old seed ought to be preferred, and the grounds thereof.

It would be of great use to ascertain, 1st. Whether the wheat should be preserved in straw or in sacks. 2d. Whether young seed if it must be used, might not be improved, by being gently kiln dried so as not to hurt the germ; by this practice, the grain might be consoli-

dated, and the flower on which the plant must at first be maintained, more fully ripened. 3d. Whether the smut, which must possess animal or vegetable life, is not destroyed, or at least weakened, by the wheat being kept for a year. 4th. Whether steeping is as necessary for old wheat, as for new. And 5th. Whether it is not owing to the weakness of the plant and not to blights or other aerial influences, that it is liable to smut, and other disorders. It is singular, that spring wheat is less liable to milldew and other disorders than winter wheat; which perhaps may be partly owing to the circumstance, that it never can be sown till several months after it is produced.

It is to be hoped, that many experiments will be tried in the course of the season, and that the result thereof will be transmitted to the board of agriculture, to whom such information must be particularly acceptable. Indeed, those who communicate experiments upon this subject, will be well entitled to the thanks of the board, and of the country.

This paper having been transmitted to Mr. Arthur Young, he returned it with the following remark.

"The advantage of sowing old seed has been long known in Gloucestershire, and generally practised on the Cotteswold Hills, where they sow so early, that they cannot use new seed; and there they do not steep on that account. In my report for Norfolk, p. 298, you will find trials and practice. See also Bannister's Synopsis, p. 84. I have sown old seed repeatedly, and never knew it smutted. See Essex Report, Vol. I. p. 302."

Farmer's Magazine.

ON THE CULTURE OF POTATOES.

Of all the roots produced in our fields and gardens, none appears to be of so much consequence as the potatoe. As food for the poor, they are certainly to be preferred to turnips; and might be rendered equally useful for cattle. As a fallow crop, they tend greatly to meli-

orate the soil; being in this respect equal to turnips; and, in general, pay the owner of the land much better.

Some persons have objected to the general cultivation of potatoes, from the apprehension of wanting a market; but while they are retailed out at two shillings and six pence, or even at two shillings a bushel, (and it is very rarely that we can purchase them lower) this apprehension will be groundless.

Add to this, that potatoes may be very profitably used as food for cattle and hogs. No food is better for rearing and fattening the latter. Cows and oxen will also eat them freely, and they are more easily preserved from frost than turnips; hence they would prove an excellent succedaneum at the season when spring food is most wanted.

If potatoes were introduced regularly in the farmer's course of crops, on light good soils, great advantages would ensue. He need not be at the trouble and expence of having them dug up clean. Let him only take up the best part, and then turn his swine in: they will gather and fatten on the rest, and repay their value in the manure they leave behind them.

Potatoes grow best in a soil that is loose and deep, where the swelling of the roots meet the least obstruction, and where they draw the greatest nourishment most easily. On this account, where the quantity intended to be raised is small, digging is preferable to ploughing, But if the land be ploughed deep, and well pulverized, success need not be doubted. They ought to be planted in lines, eighteen inches apart, and at twelve or fourteen inches distance in each line or row. This will give opportunity for earthing them up with the horse-hoe while young, which will greatly promote their fertility. If the horse-hoe is not intended to be used, plant them a foot square, and earth them up with hand-hoes several times, which, although more expensive, will repay the cost.

Care should, however, be taken, in the latter hoeings especially, not to go too near the plants, lest you cut the

roots. You need only, after they are weeded by hand, to draw up the earth from the centre round each plant. Vast quantities may be obtained by a little additional labour in keeping them clean, and the land will be left in excellent order for succeeding crops. It is necessary to observe, that the same kinds ought never to be planted twice together on the same land; nor the same land set with potatoes more than two years at the longest. When raised from the seed, great varieties, and some excellent new kinds, will be obtained. *Bath Papers.*

LITERARY AND PHILOSOPHICAL.

The Rev. JAMES HALL, has, for several months past, been usefully engaged in experiments for procuring flax from broom. This is done by the following process:— Steep the twigs, of the former year's branches, preferring the most vigorous shoots, for two or three weeks, more or less according to the heat of the season, in stagnant water, or boil them for an hour, in water. This done, the flax separates freely from the twigs; and where there is not machinery for the purpose, it may be easily stripped off by children, or others, at any time, when not quite dry; as hemp is pulled from the stalks. What adds to the value of this discovery is, that on being cleared of the flax, and steeped for some time in boiling water, the twigs, or wood, become tough and beautifully white, and are worth, at a medium, from a shilling to eight pence a pound, for making carpet brooms, &c. When stripped from the twigs, the flax requires only to be well washed in cold water, then wrung, and shaken well, and hung out to dry, previously to its being sent off to the paper manufacturers, &c. Professor *Davy* has bleached some of it for Mr. Hall, who has also seen it spun. The same gentleman also observes, that the fibres of all kinds of mallows are particularly beautiful, especially the malva sylvestris. They are finer than camel's hair, which they somewhat resemble, and there is no difficulty in procuring them.

London Monthly Magazine.

Extract of a Letter from the same Gentleman, on Vegetable Materials for making Paper.

For some time past, among other pursuits, during my leisure hours, I have tried a variety of experiments respecting the various and least expensive articles from which paper can be made; and, partly with a view to this, I have travelled through the greater part of Scotland, England and Ireland. The result of my experiments and observations is, that by far the cheapest and most ready articles from which paper can be made are refuse of hemp and flax; and the hempen particles of the hemp and bean plant.

It is a fact, that about the generality of mills for beating and dressing hemp and flax, a large portion, in some inland places, amounting to nearly one half what is carried thither, is either left there to rot under the name of refuse, or thrown away as of no use; because too rough and short for being spun or converted into cloth. Now, from the experiment I have tried, I have uniformly found, that though too rough and short for being converted into cloth, even of the coarsest kind, the refuse of hemp and flax, on being beat and shaken so as to separate the strawy from the rough stringy particles, which can be done in a few minutes by a mill driven by wind, water, steam, or even by an old blind horse, becomes thereby as pliable and as useful for making paper, as the longest and what is reckoned the most valuable part of the plant, after it has been converted into cloth and worn for years.

In its natural state, it is true, the refuse of hemp and flax is generally of a brown and somewhat dark colour. But what of that? By the application of a little oil of vitriol and other cheap ingredients well known to every bleacher, such refuse, without being in the least injured for making paper, can in a few hours, if necessary, be made as white as the finest cambric. By being beat when wet by a mill or otherwise, it also acquires a considerable degree of whiteness.

Nor is this all; for the bine or straw of hops contains an excellent hemp for making cloth, canvas, ropes, cables and a thousand other articles; also the very best materials for making all kinds of paper. And it is a fact, that were even one half of the bine of the hops raised in the counties of Kent, Sussex and Worcester, instead of being thrown away after the hops are picked, or burnt, as is commonly done, steeped for five or six days in water, and beat in the same way as is done with hemp and flax (independent of what might be got from scarlet runners, nettles, the haum of potatoes, &c.) there would be found annually materials enough for three times the paper used in the British dominions.

While we admire the rapid progress that is making in painting, sculpture, engraving, architecture, coach building, and the elegant arts in general, one cannot help being astonished at the slow progress that is making in discoveries of the useful kind in various departments. Though it has not been attended to, nor, so far as I know, has ever been mentioned by any one, yet it is certain that according to size, every bean plant contains, from 20 to 35 filaments running up on the outside, under a thin membrane, from the root to the very top, all round; the one at each of the four corners being thicker and stronger than the rest. It is also certain that next to Chinese seagrass, in other words the material with which hooks are sometimes fixed to the ends of fishing-lines, the filaments of the bean plant are the strongest and most durable yet discovered.—These, with a little beating, rubbing and shaking, are easily separated from the strawy part, when the plant has been a few days steeped in water, or is damp, and in a state approaching to fermentation, or what is commonly called rotting.

From carefully examining the medium number of stalks or bean plants, in a square foot, in a variety of fields, and multiplying these by 4840, the square feet in an acre, and then weighing the hemp or filaments of a number of stalks, I find that there are, at a medium, about 2 cwt. of hemp on these filaments in an acre, ad-

mirably calculated for being converted into canvas, cables, cordage and a thousand other things where strength and durability are of importance, as well as, with a little preparation, into paper of all kinds, even that of the most delicate texture. Now, as there are, at least, 200,000 tick, horse and other beans, in Great Britain and Ireland; and since, where there is not machinery for the purpose, the poor of each work house, and others both young and old, males as well as females, might (hemp having risen lately from 60 to 100 pounds per ton) be advantageously employed, and gain something handsome for themselves, in peeling or otherwise separating the filaments from the strawy part of the bean plant, after the beans are threshed out. Yours, &c.

JAMES HALL.

BOTANY.

It appears that in the principal works of botany, there are described 2046 genera, and 19,803 species of plants, of which 683 genera have but one species, 263 but two, 174 but three, 124 but four. This enumeration is, however, only an approximation to the truth, as the works referred to are defective, and we may call the number of described plants 22,000. The first edition of Linnaeus's *Species Plantarum* contained only 7,300.

(London Monthly Magazine for January, 1809.)

National Wealth.

Mr. Oram, bookseller, at Trenton, is about republishing in a duodecimo volume in boards, at 60 cents, Chancellor Livingston's celebrated "ESSAY ON SHEEP." This treatise has been considered of such utility and importance in the state of New York, that the legislature of that state has ordered 1500 copies of it to be distributed at the public expence. We trust individual patronage will render any farther legislative provision unnecessary. If we would arrive at real independence of other nations, we must cherish the means which alone can make us so —and of these means sheep are an important and indispensable part.

WOBURN SHEEP-SHEARING.

THIRD DAY—WEDNESDAY.

The Company, after breakfast, repaired to the slaughter house, near Woburn Abbey, to view the carcasses of the fat wethers, shewn alive yesterday, as follow—

Mr. Bliss.	lb.	oz.	Lord Ongley.	lb.	oz.
Carcass	92	8	Carcass	102	8
Loose Fat	10	14	Loose Fat	10	4
Fleece	7	4	Fleece	6	11

Mr. Runciman.	lb.	oz.	Mr. Clayton.	lb.	oz.
Carcass	92	7	Carcass	130	8
Loose Fat	13	15	Loose Fat	12	0
Fleece	4	6	Fleece	8	8

Mr. Platt.	lb.	oz.	Mr. Trevor.	lb.	oz.
Carcass	112	12	Carcass	85	12
Loose Fat	13	7	Loose Fat	11	12
			Fleece	4	0

The company next repaired to the park, where were exhibited an experiment with Lambert's mole Capstan draining Plough—the prize Sheep shearing—a choice collection of seeds of grasses and other agricultural plants—the process of building a wall of *pise*, or compressed earth—various implements of husbandry—a second shew of South Down Tups—and several Hereford and Devon Cattle.

About three o'clock the company repaired to the Park Farm, and sat down to an elegant dinner, his Grace (the duke of Bedford) in the chair. After which, and several appropriate toasts, his Grace rose, and proceeded to read the adjudication of the several Judges, for the different classes of his Premiums, as follows, viz.

To Mr. Bithrey, a Cup, for his 2-shear long wooled fat wether.

To Mr. John Butfield, a Cup, for his 2-shear long wooled fat wether, bred in Bedfordshire.

To R. Trevor, Esq. a Cup, for his 2-shear short wooled fat wether.

To Wm. Runciman, a Cup, for his 2-shear short wooled fat wether, bred in Bedfordshire.

To Mr. Bliss, a Cup, for his pen of long-wooled theaves. *

To Lord Ongley, a Cup, for his pen of short wooled theaves.

To Mr. Trevor, a Cup, for his pen of short wooled theaves, bred in Bedfordshire.

The judges for the long-wooled sheep, were Lord Somerville, Richard Astley, Esq. and Thomas Crook; and, for the short-wooled sheep, J. Reeves, John Elman, jun. and Henry Boys.

His Grace, on the delivery of these Cups, paid a well merited compliment to the general excellence of the sheep exhibited, and of those in particular, to which prizes had been adjudged.

A Cup was awarded and delivered to Wm. Runciman, for the best boar under two years old.

There were awarded and delivered to John Bollard, of Lidlington, 5 guineas. George Arnold, of Aspley 4 guineas. James Martin of Northill, 3 guineas. Job Arnold, of Crawley, 2 guineas. Richard Cozens, of Lidlington, 1 guinea, for their respective merits in sheep-shearing.

Twenty guineas were adjudged to Mr. Robert Salmon, for his Planting-plough and Drag; an implement which was much and very justly commended.

The Cup for the best plough was adjudged to Andrew Wilson, his Grace's bailiff at the Park Farm; and two guineas to John Green the holder of it.

Thirty guineas were delivered to Mr. William Runciman, of Birchmoor Farm, for the most satisfactory comparisons of the drill and broad-cast culture of corn, on ten acres of land.

* Ewe lambs of the first year.

The premiums to careful shepherds were next distributed, as follows, viz.

5 gs. to J. Sherwood, for raising 252 lambs from 205 ewes.
4 gs. to——Clark,——288——236
3 gs. to J. Holland,——735——613
2 gs. to——Nottingham,——581——521
1 g to——244——236

His Grace then lamented, that a third year had elapsed, without his having received any claims for the fifty guineas he had offered, for making ten acres, at the least, of land, in Bedfordshire, into water-meadow; especially, as they had only to view his meadows here, at Priestley and at Maulden, to be convinced of its immense advantages. As they might also be, by consulting Mr. Coke and Mr. Reeves of Norfolk, who were present. He should, however, continue to offer it for one year more; and should make no other alteration in his premiums, for next year, than omitting that for comparative trials of drill and broad cast husbandry, the trials having proved in favour of the drill uniformly.

The printed conditions of premiums for next year, were then distributed to the company, as also a statement of drilled and broad-cast husbandry, by Messrs. Batchelors, of Lidlington, in Bedfordshire.

His Grace concluded by remarking, that his objects in these Meetings were general improvement, and that of Bedfordshire Husbandry in particular; which he lamented much to say, was still disgracefully behind that of many other counties, a disgrace which he earnestly exhorted the company present, to do their best to wipe away, as speedily as possible. His grace then gave,

"Mr. Coke, and Norfolk Husbandry."

Mr. Coke rose and said, that called on as he was to acknowledge the compliment paid to him, and to Norfolk Farming; he lamented that he could not sit down without joining in the charge brought by their Noble Host, against much of the husbandry of Bedfordshire, where little improvement was certainly visible. Often as he

had repeated his invitation in that room, to the Bedfordshire farmers, to come down to Holkham, and view the system here and on the farms of his tenants, few had availed themselves of it. He was proud to state, that some of his tenants, who were formerly as backward as themselves, and as prejudiced in favour of old practices as themselves, Mr. Reeves in particular, who was present, were now bright examples of good management. Norfolk sheep, continued Mr. Coke, have given place to Mr. Elman's improved South-down sheep, and drilling has become general, without any instances of farmers going back from Downs to Norfolk sheep, or from drilling to broad-cast corn, and by which practice the earlock, and other disgraceful weeds of Bedfordshire, ought to be got rid of. Mr. Coke concluded by observing, that Sir Joseph Banks, by his exertions in favour of Spanish sheep, had rendered a most important service to our manufactures; but do they, said he, want mutton? or can we have a fine fleece on a fat carcass? and gave,

"Sir Joseph Banks, and a fine fleece on a fat carcass."

The worthy Baronet rose, and with much animation and good humour, thanked the company, congratulating them that it was at length admitted, that improvement in wool had been effected: and said, that if the Merino carcasses were inferior, it was, because their improvement was but just begun. We have, said he, seen New Leicesters rise from nothing, and no one knows what breed; and we have seen Downs, formerly like rats in size, now rivalling any breed in the kingdom. In Spanish sheep there is as much capability as in Lincolnshires, which have risen into Bakewells, or in little rats of South-downs, which have swollen into improved Downs.

This speech was much and long applauded.

The company returned to the farm, and a sale of Park Farm stock took place, as follows:

10 South-down Theaves	41 guineas,	Rev. ——Sims.
10 ditto.	46	Mr. Elman.
10 ditto	41	Mr. Morris.
10 ditto Ewes, two-shear	40	Mr. Elman.

10 ditto three shear . . . 39 guineas ditto.
10 ditto full mouthed . . 31 Mr. J. Moore.
A Devon Heifer, three years old } 20 1-2 . . . Mr. Smith
Ditto. ditto 26. ditto
A Hereford Cow, seven years old . . . } 22 1-2 ditto.
Ditto. ditto 22 Mr. J. Moore.
A Devon Bull, aged . . 24 Mr. Coke.
A Hereford Bull, ditto. . 60 Mr. Smith.

The company then began to separate; some repairing to the Holkham, and others to the Beechwood Park *fetes*, and Hereford Agricultural Meeting.

Extracted and abridged from the London GLOBE, of June 22, 1810.

WOOL CARDING.

SCHOLFIELD & HOOFMAN have lately erected a complete set of Wool Carding Machines at the Adelphi Mills, three and a half miles from Bladensburg, Prince George's County Maryland.

This mode of Carding Wool into rolls, is so generally approved, where ever it has been brought into use, that there can remain no doubt of its utility. It saves much labor and time, prepares the wool better for cloth, and by mixing it in larger quantities, renders the cloth of an even texture and uniform quality; wool of different colours may be nicely mixed—and the expence is but 10 cents per pound.

Those who send wool to such machines ought to have it assorted and washed; matty ends, dirty locks and burs must be cut off; and to every 8 or 10 pounds of wool, one pound of soft grease should be sent, together with a sheet sufficiently large to contain the rolls, which may be carried on horseback without injury, or in a cart or waggon.

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THE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

No. 1.] *Georgetown, Ca. Sept.* 12, 1810. [No. 6.

In a number of the Counties of Virginia and Maryland, considerable attention has been paid to Agriculture and Domestic Manufactures for several years past. Societies have been formed for the purpose of promoting those important objects—valuable information has been obtained and communicated to each other—and great improvements have been made. The Agricultural Museum now affords them the means of extending the sphere of their usefulness, and of communicating the result of their researches to the community at large.

AN ACCOUNT OF A NEW VARIETY OF WHEAT DISCOVERED IN VIRGINIA, COMMUNICATED TO THE CULPEPER SOCIETY FOR THE PROMOTION OF AGRICULTURE AND DOMESTIC MANUFACTURES, BY THE HON. JOHN TAYLOR, ESQ. OF CAROLINE.

The history of a forward species of wheat, lately discovered in Virginia, is a short one. A Mr. Isbell of the county of Caroline in that state, about seven years past, purchased a quantity of mixed wheat of a merchant, and having sown it, accidently observed when his wheat was in flower, a single ear almost ripe. Hence he conceived an idea, that it might be a different species. To determine this, he carefully preserved the wheat produced by his solitary ear, which has now multiplied to such a degree, as that several thousand bushels will be made at the next harvest; for it has been distributed into many hands.

But the character of this wheat, deserves greater attention; and as in all probability, it has not yet entirely unfolded its qualities, it is much to be desired, that the best informed botanical knowledge, and the most accurate

agricultural experiments, were united in its investigation.

The following observations arise from several trials upon different soils, made in the two last years; a term so short, that it would be dangerous to allow them an unsuspicious reliance.

This wheat is ripe from fifteen to twenty days before any other—the straw is shorter by about one third, than that of any other kind, and the same proportion is maintained in the length of the ear. But the ear always has a full and prominent appearance. The straw is encumbered with very little fodder.

The circumstance of its ripening so early, produces the following important effects.

1st. It is never liable to be destroyed by the rust or smut. An effect towards which the nakedness and lowness of the straw, by allowing more freely the action of the sun and air, must considerably contribute. Upon this point the experiments appeared to be conclusive. The two last years were singularly unseasonable upon wheat in general, after it was in the ear, at the place where the experiments were made, and most so upon this particular species. But this bid defiance to the pestilence, and weighed above sixty pounds to the bushel, whilst all others suffered a loss of about one third in quantity, and did not in weight exceed an average of fifty five. The experiments were made in six different places. Upon new—old—stiff—light—poor and rich ground. The different species of wheat were sown on the same day, contiguous to each other, early and late.

2. Being ripe before cockle has arrived to a vegetative state, it is never assailed by that enemy. And it is probable that the seed of the wild onion, may feel a shock from the same cause. As to cheat, it did not make its appearance among this wheat; but it is to be expected, if this, like other wheat, is liable to degenerate into that weed.

3. If vegetables extract much of their food from the atmosphere, as the experiments of Doctor Priestly seem

clearly to prove; and if more of this food is obtained, when the air is condensed by a degree of moisture, than when it is in a state of rarefaction, it results, that this wheat cannot equally impoverish the soil with any other species. Because it comes to maturity before the heats of summer have driven down vegetables to pasture themselves, almost exclusively, upon the store of food absorbed by the earth.

4. Admitting this theoretic argument to be inconclusive, it will not weaken the force of another, which is experimental. Clover was sown upon four of the six lots of this wheat, and also upon other kinds contiguous to it. The clover, and, where there was no clover, the weeds succeeding this wheat, surpassed in growth the clover and weeds succeeding other kinds, so greatly, that their superior luxuriancy was distinguishable, almost as far as they could be discerned. And tho' this effect should be attributed to the removal of the forward wheat from the ground, earlier than the other, or to any other cause, yet it must be acknowledged, that it will have a preservative influence upon the fertility of the soil.

5. Wherever the climate will admit of the cultivation of artificial grasses, the last observation deserves considerable attention. And it is aidable by others directed to the same object. Before, as well as after the forward wheat was cut, the growth of the clover sown upon it, greatly exceeded that of its neighbours. And it also came up better. Whether this is ascribable to the lowness of the wheat, and its not being burthened by any operative weight of fodder, or to any other cause, it is yet an effect, as recommendatory of it to northern climates, as its safety against rust is to southern. The product of the grass, both for hay and pasture, is greater, and it also acquires a strength of constitution, capable of withstanding the summer heats? There it almost universally survived, whilst the contiguous clover, debilitated by being oppressed with a greater burthen of straw, and to a later period, perished generally in great quantities, and in spots, entirely.

6. If Indian corn is cultivated to a considerable extent, it usually suffers at harvest. The harvest of the forward wheat is over, when the corn is yet young, and therefore recoverable; whereas it often happens, that it sustains irretrievable injury, by arriving at an advanced state, during the neglect incident to the latter harvest. This also produces a pressure of time, forcing the husbandman to work his corn in improper seasons, so as greatly to diminish the crop.

7. When potatoes, or other vegetables, which are gathered late in the fall, are used as a fallow crop, the repugnancy of this wheat to the rust must be highly recommendatory; because late sowings are ever most liable to this misfortune.

With respect to the straw, which, including the fodder, is inferior in quantity more than one third, to that of other wheat, it occurs to observe,

1. That this circumstance produces a saving of at least one third of the labour, of cutting—gathering up—carting—stacking—and threshing.

2. That the wheat never lodges.

3. That it may almost in every instance, be cut by the scythe.

4. That the straw is not liable to be damaged by the rust.

5. That the grain, before and after the wheat is cut, is not liable to an equal risque from rain, with the latter wheat, because the straw dies faster, and is gotten in sooner.

It will be objected, that this circumstance diminishes the great fund for manure. To this it is answered, that the straw is only an offal of the crop. That no crop can be cultivated for the sake of the offal. That the impoverishment of the soil by the growth of straw is probably regulated by the quantity produced. That this argument unites with the reasons before given, to sustain an inference, that it will require the whole surplus of straw, produced by the latter wheat, to repair its surplus of injury to the soil, beyond the forward. And that

though it be admited, that any given quantity of land, in the latter, will produce more straw, than the same quantity in the forward, it does not follow, that the same effect would flow, from a given quantity of labour; because the savings of labour, being equal to the deficiency of straw, may be converted to the increase of the crop, and thus more than compensate for that deficiency. Besides, if these arguments are just, they exhibit an article of agricultural economy, of great importance. The whole labour of removing the surplus of straw, produced by the latter, beyond the forward wheat—of converting it into manure—and of restoring it to the soil, is saved, and nothing is lost by the soil from this saving, because the forward wheat does not take this surplus from the soil.

The shortness of the ear, is the next object of consideration, as it obviously prognosticates a diminution of the crop.

It is evident, that an ear, one third longer, if well filled, must produce the most wheat. But it cannot be concluded from hence, that an equal quantity of land, or of labour, will produce more latter than forward wheat. Because,

1. As to the land, it may bear being sown one third thicker in forward wheat, than in latter, and if so, the objection arising from a deficiency of straw, is also removed. But if with an equal quantity of seed, the crop of grain will be equal, and the land can bear a proportion of the forward seed beyond the latter, it follows that the crop per acre of the forward wheat will be greater, whilst it will impoverish the soil less, by reason of being separated from it soonest. Nor is this improbable, because all the exclusive casualties to which the latter wheat is liable, ought to be taken into the computation. And because the grain of the forward wheat, is almost invariably best filled and heaviest.

2. Should this expectation turn out to be groundless, as to an equal quantity of land, yet it may be safely affirmed, that an equal quantity of labour, would at least produce an equality in the crops, both as to grain and straw. More ground might be kept in tillage, because

it would be less impoverished. An improvement in the fertility of the soil, would be effectuated. And all the exclusive calamities to which the latter wheat is liable, avoided.

To form a comparative average of these rival crops, would require a long succession of accurate experiments, as the only means by which a just computation of the exclusive calamities, so inimical to the latter wheat, could be made. During the two years' experiments before mentioned, the forward wheat had the advantage of the latter, in every respect, and in all soils. The crop was greater by the acre—in increase—for the labour—heaviest—and the straw was the most valuable. But these results, though related, are not to be relied upon, to infer another result, in the case of both kinds arriving to a state of complete perfection.

The grain of the forward wheat is harder than that of any other, with which it has been compared—it is large—plump—white—and produces flour both in quantity and quality, equal to the best latter white wheat. This hardness of the grain, conspires with the inferior growth of straw and fodder, to lessen the liability of the forward wheat, to sprout in the field, either before or after it is cut. An effect, to which its ripening in cooler weather, also contributes.

It is very probable that this species of wheat, would be an useful acquisition to those countries, which have summers so short, or climates so hurried, as to cause many impediments to the culture of wheat. Should it succeed, labour would be lessened, and the crops rendered more certain. Such a probability suggests the propriety of introducing it into Great Britain; because, whilst it might benefit that country, it might open a temporary branch of commerce to this, of considerable importance. And if, as is possible, it should be found that our soil and climate operated particularly against the degeneracy of the wheat, its exportation for seed, might be a trade of considerable duration.

JOHN TAYLOR.

Philadelphia, January 1, 1794.

For the Agricultural Museum.

THE IMPROVEMENT OF MERINOS IN THE UNITED STATES.

Extract of a letter from Chancellor Livingston, to Mr. Custis of Arlington, dated 29th June, 1810.

My sheep shearing this year offers the following curious and encouraging facts:—

The average of the fleeces of my three stock rams, was upwards of nine pounds fourteen ounces; and one of them weighed 11 lb. 11 oz. which sold at $2 per lb. as it came from the sheep's back. I believe the United States have never before witnessed a fleece that sold as this did, at more than $23.—The average of the ewes' fleeces, the whole number being 196, was equally interesting, as you will see from the following statement:—

		lb.	*oz.*		*lb*	*oz.*
Half bred ewes averaged		5	1	heaviest fleece,	8	
3-4 do.	do.	5	3	heaviest fleece,	7	9
7-8 do.	do.	5	6	heaviest fleece,	8	4
Full bred,	do.	5	13	heaviest fleece,	8	12

From this it appears, that the weight of the fleeces is proportioned to the purity of the blood, and that in crossing with these sheep we not only gain in the value of the wool, but in its quantity, which I am told is more an object in your state than the quality. If so, cross your long wooled ewes with Clermont Merino rams, and I am persuaded that you will add to the weight of their fleeces. The next thing worthy of observation is the improvement on my stock since the last year; the average of my full bred ewes was then only 5 lb. 2 oz. this year they have gained nine ounces per head, though the keep was exactly the same. I attribute this to two causes, first to the better selection of rams, which I am now able to make, admiting none to my flock that are not very fine and that yield less than 9 lb. of wool;—and next, to the general improvement occasioned by keeping and climate, for it is upon the young ewes that the gain is most—the old ones remaining as they were last year. A third

inference from these facts is, that it will be very practicable to have a flock of ewes, whose fleeces shall average at least 8 lb.—for if some give 8 lb. 12 oz. and several 8 lb. there can be no doubt that when I begin to select my ewes as I do my rams, and sell those that have the lightest or coarsest fleeces, I may bring them to 8 lb.—which is about the standard of the Rambouillet flock—and more than the double of the flocks of Spain. It is by this mode of proceedure that the flock of Rambouillet is so very superior to the Spanish flocks, both in the quantity and the quality of the wool.—What will be the state of our manufactures when your farmers, instead of a few ragged sheep, keep flocks of 1000 Merinos, which any farm of 1000 acres may conveniently do? And let me add, what will be the difference in the circumstances of the farmer, who receives 16000 Dollars a year for his wool, with less expence than it costs him to make 1000 Dollars by his tobacco?

Extract From Lord Somerville's Essay on Sheep.

Continued from page 68.

The Merino fleece is, in colour, unlike that of any English breed. There is a dark brown tinge on the surface of the best fleeces, amounting almost to a black, which is formed by dust adhering to the greasy, yolky properties of its pile; and the contrast between it and the rich white colour within, as well as that rosy hue of the skin, peculiarly denoting high proof or aptitude to fatten, surprise at first sight. The harder the fleece is, the more it resists any outward pressure of the hand, with certain exceptions, the more close and fine will be the wool.

On their first importation, there was a great deficiency of milk in the ewes, as well as a tendency to barrenness, which is now ascertained to have arisen from the severe journeys to which this race of sheep is twice in the year subjected, when in Spain, and to which their valuable properties have been blindly attributed. They are now regular in their time of lambing; their udders are as full,

and they are as good nurses as any sheep I have ever seen. It was not till some years after their arrival in this country, when they had become inured to the climate, that any instance of double lambs occurred, now it is not an unfrequent occurrence.

That power to influence the character of a flock, which is said to exist in the male rather than in the female, is here apparent; first, in as much as the polled rams of this breed, which are occasionally to be found, if descended from a polled ram, will produce male stock having a tendency to be without horns, or at least to have only snaghorns; and, on the other hand, the get of the Merino ram, on shearling ewes got also by himself, have a strong tendency to horns, almost equally so with the wethers of this breed, which resemble very much the small original Dorset wether; for this reason, I judge that a cross between the best shaped Merino ram, and the old Dorset ewe, will be excellent, because the outward character being much alike, the want of quantity and quality of wool, in the Dorset breed, will be corrected in the most striking manner; this tendency in the Merino sheep, to grow wool in abundance, must add materially to the health of the flock, by covering the most vital and tender parts of the body, namely, the belly and the breast. The effect of a Spanish ram on the fleeces of a horned flock, such as the Dorset, the Welsh (a sheep of neat frame), on the Wiltshire, the Norfolks, the Dartmoor, the Scotch, and indeed the whole race of horned mountaineers, will be neither more nor less than a very great increase of profit on the fleece, with very little, if any, injury whatever to the form of the animal. And when we consider, that the fleece makes an annual return, the rental as it were, and that a quick return is allowed to be the farmer's best object, while the carcass, like the fee, can only be once sold, we may express alike our surprise and regret, that such fatal supineness should have thus long prevailed, on a subject of the most manifest importance, both to the tenant and the landlord.

Attention has not been paid, in Spain, to the form of their sheep; and it must be evident to every judge of stock, that a journey from the mountains of the north to the plains of the south of Spain, cannot be otherwise than productive of more injury to the frame and constitution of the animal, than of benefit to the fleece, which, like the frame, is dependent on and nourished by the blood. Does it stand to reason, that a long drift of four or five hundred miles every spring and autumn, and that at the rate of eighty or a hundred miles per week, can be beneficial to sheep? Undoubtedly not. Have we a single breed which could support it uninjured? None, which would not have been hunted into deformity.

So far from thinking hot climates necessary to fine wool, we know that coarse-fleeced sheep are to be found in many parts of Spain; that in Portugal, wool, unmixed with Merino blood, is, of the coarsest quality. We know too, that after shearing, every pile is coarse, and improves, both to the eye and touch, as the autumn advances. No race of sheep has ever been seen, even in this northern climate, to be more impatient of heat, or more oppressed by it, than the Merino. By due attention to food; by moderation and equality of keep; by shelter in the winter months; and by those common regulations which induce health in the animal itself, we shall stand as high, as to the produce of wool and meat, as any nation in Europe. One inference may be clearly deduced from the long drift and yolky fleece of the Merinos; namely, that they are equal, if not superior, to any breed in these kingdoms to work in the fold. We may add, that the length and thickness of wool covering their belly and hind legs, together with a closeness of pile on the back and loins, must of necessity enable them to support more severity of cold and wet than any breed as yet introduced among us; unless we admit, that length and fineness of wool are inseparably connected with weakness of constitution, which evidence from all quarters forbids us to do. With respect to the yolky fleece above noticed, this property alone demonstrates the superiority

of this wool to all others, for every purpose of clothing manufacture; and as it is occasionally found in other breeds of short wool sheep, I think it right to enlarge a little upon it.—By "yolk," is meant that yellow substance which escapes from the skin, and is to be found in the wool of every Merino sheep, when in health and good condition. This singular property it is which qualifies wool for the milling or felting process, and which, in fact, makes the difference between good and bad cloth. It is the surest symptom of health in sheep; and I cannot help considering it as similar to those wholesome secretions in other animals which are the invariable concomitants of health, if not carried to excess: I mean that cold dew which we find in the nose of the ox and cow; this moisture dried up, is the first and surest sign of fever; so, in the human species, when the nasal discharge is regular, health prevails; in fever, it constantly disappears. I may be mistaken in calling these properties analogous; I am not in stating that they are severally the surest criterion of health and disease. When a sheep is fatted, this yolk is thrown out in an increased degree; and, in our English breeds, would probably be attended with a deterioration of the wool; but in the Merino race of sheep, as far as my practice has gone, it adds only to the length of the pile. I see no deficiency of yolk in Merino sheep in England, well kept and inured to the climate; and I am decidedly of opinion, that it is the best proof we can have to guide us, that any climate is not too severe, whilst the yolk rises. If it will rise in Lapland, Merino sheep will prosper there.

In other respects, these sheep are not much unlike some English breeds. The rams, indeed, have a buff tinge in their countenance; they may reach 17 lbs. a quarter, when tolerably fat; the ewes are not low on their legs, are very fine in bone, and may reach 11 lbs. a quarter. There are various opinions as to their origin; Mr. Tollet thinks it may be traced from Asia Minor, and Greece, into Italy; from thence, probably, into Spain. Columella, and other writers, call them "Tarentine sheep,"

from the city of Tarentum. We have it recorded, that they originally came from England in the beginning of the fourteenth century: be this as it may, it is high time they return to it again: for although there are different opinions as to their origin; within a few years there will be but one as to their value. [*To be continued.*

On the manner of making Wine from the Native Grape, and the advantages to be derived from its cultivation. By JOSEPH COOPER, of New-Jersey.

I gather the bunches of grapes when fully ripe and dry: separate rotten or unripe from the sound and good, (the former may be distilled for brandy). For making the wine, I open the cider or apple mill, so as not to mash the stems or seeds, then run the grapes through it to break all the berries; let the mashed fruit stand in a tight vessel ten or twelve hours, then lap it in clean straw, first made damp on the cider press floor, and then press the juice out as clean as possible. Then take the pumice, moisten it with water, let it stand as above, and press it again, add the liquor to the other, and then add sugar agreeably to the acidity of the grape. I have found from half a pound to one pound per gallon to be sufficient, and the white Havanna sugar the best.

When the sugar is dissolved, put it in a cask for fermentation; fill it night and morning to work out the filth. When it discharges a clear white froth, check the fermentation gradually by putting the bung in slack, tightening it gradually till the liquor is in a tranquil state, then rack it into a clean cask, or return it into the same after having rinsed it well with gravel and water. I find it best to put into the cask a pint or pint and half of French or good Apple brandy, to each gallon of the cask's contents; then fill it about one quarter full of the wine, burn a sulphur match suspended in the bung hole, and stop it while burning, after which shake it well to incorporate the smoke and liquor; then fill the cask if you have a sufficient quantity, if not fill it with what is filtered from the lees, which should be done by suspending it in a bag made of linen or flannel, in the form of a cream strainer, over a broad vessel, returning it as it

runs, till it drops clear:—The liquor thus procured from the lees, improves the other, as its flatness assists in tranquilizing it. In about a month it should be racked again, and I find letting it dribble or pass slowly through the atmosphere into an open vessel, assists in giving it the quality of age. I have repeated the racking several times and found benefit from it. When made in the above way it generally fines itself; if not, it may be fined as other wines are.

Taking into consideration with what ease and expedition grape vines may be propagated to advantage, the great expence and uncertainty of being supplied from foreign countries, and the base and dangerous practice of adulteration by many of the venders of wine, I am induced to urge the propagation of grape vines, especially in such places where shades are wanted, as they may be placed and trained in such manner as fancy and convenience may direct—Grape Vines are better for shades than trees, and if placed on horizontal arbors between the first and second stories of houses, will not obstruct air or prospect. And is the most favorable situation for the production, quality and protection of the fruit.

Experience has convinced me that the best kind of our native grapes is the most proper to plant and cultivate in our country, as they are proof against the severest winters; are not so subject to blast or rot on the vines as foreign grapes, placed in situations where they can have the full benefit of soil, sun and air. Spread on horizontal arbors and properly trained every spring, their production and quality will exceed the expectation of any who have not seen it tried.

As there are in the United States numbers of persons from countries where the best of wines are made in abundance, many of them must have a thorough knowledge of the business; I hope some of them will favor the public with an account of the process; mine must be imperfect as it is only experimental.

There has been made in the town of Meadville, Penn. this year, between 700 and 800 gallons of currant wine, little inferior in flavor, body, and appearance to the best Sherry. The average cost of this wine will not exceed fifty cents per gallon.

THE POST-OFFICE ESTABLISHMENT.

When we look back and see what our country was a few years ago, and consider what it is now, we cannot fail to be astonished at its growth. The old world furnishes no example of the kind. Indeed, so rapid is the advance of improvement, that our minds are scarcely able to keep pace with its progress, and we are almost led to deny the evidence of our senses.—The traveller, as he proceeds on his journey, passes a wilderness; and behold! on his return, as if by magic, the wilderness is converted into a fruitful garden, and blossoms with a thousand sweets.

One hundred years ago, the whole importations into North America did not amount to $2,000,000 annually. Fifty years afterwards, the imports had increased to twenty millions of dollars; and in 1807, the *duties alone* on imports into the United States (making no deduction for drawbacks) exceeded twenty-six millions of dollars; a sum equal to the export trade of Great-Britain to all the world a century ago.

Should no untoward circumstance interrupt the prosperity of our country, a few years will place us entirely independent of the products of Europe, and our physical strength may bid defiance to the united efforts of her arms.

Among the improvements in the United States, there is, perhaps, no one that has advanced more rapidly, or proved more extensively useful, than that of the transportation of the mail. There is not a man of literature or business in the nation who does not constantly experience its benefits. Yet very few give themselves the trouble to reflect a moment on its importance. In point of public utility, it holds a rank but little inferior to printing. Copies may be multiplied at the press, but, without this establishment, how limited must be their distribution! By the extensive and rapid transportations of the mail, the transactions of each part of the country are circulated, as if on the wings of the wind, through the whole. The merchant, without leaving his counting house, learns the

state of the market from Orleans to Maine, and gathers in a few hours, from the arrivals at every port, the course of trade in Europe: while commerce derives, from quick and certain intelligence, a new and vigorous impulse.

Behold yon group of eager politicians waiting the arrival of the mail! How frequently they enquire the time! A minute has elapsed since it should have arrived, and their impatience has become ungovernable. The lively interest excited by its delay discovers how much it contributes to our interest or our happiness. The lover, too, is indebted to this establishment for the favor of his absent mistress. Her letter is brought him, the seal yet moist, and even the kiss it contains has not lost its fragrance, although an hundred leagues have been passed since her rosy lips impressed it.

Benjamin Franklin was the first superintendant of this department—Since the period of our revolution it has been constantly advancing to perfection, under the direction of a Pickering, a Habersham, and a Granger.

The following table will give a tolerably correct idea of the improvements in this department since 1793; and while it shews that much was done under other superintendants, it also proves, that a great deal has been accomplished under the present Post-master General. It is not surprising that there should be some interruptions in transporting the mail which runs five millions of miles in the year. Nor is it matter of the least wonder, that, among two thousand Post-masters, there should be some inattentive or disobliging. But, in a business so extensive, employing so many persons, and in which the least failure excites so much sensibility, it is rather singular that there is not a greater interruption and more cause for complaint. And surely it is neither generous nor just, to ascribe, as is too frequently the case, every failure to the Post-master General. I scorn that narrowness of spirit that denies to merit its reward. The liberal mind will disdain to be influenced, by the spirit of party to withhold the meed of honest and well deserved praise from a public officer. In performing the duties of Post-

master General, Mr. Granger has discovered those enlarged views, that liberality of sentiment, and that devotion to the public interest, that will secure to him the approbation of every man, whose good will is worth possessing.

X.

The several periods referred to.		Number of Post-Offices.	Length of Post Roads.	Weekly transportation of the mail in stage carriages which accommodate travellers.	Weekly transportation of the mail in sulkies or on horse back.	Amount of Weekly transportation of mails in the U. States.	Amount of yearly transportation of mails in the United States.
			Miles	Miles	Miles	Miles	Miles
March 3,	1793	195	5640	8567	7662	16229	843998
March 3,	1797	539	14220	14902	19703	34610	1799720
March 3,	1801	957	21840	21490	34380	55870	3057961§
Jan'ry 24,	1803	1883	24458	30172	37228	67100	3504800
January,	1807	1848	31616	41528	45000	86528	4499456§§
	1809	2000	32500	43851	51582	95433	4962516§

§ Mr. Granger entered upon the duties of Post master General in December, 1801.

§ Since the 3d of March, 1801, the post roads have increased 44 3-4 per cent. The establishment of mail coaches has increased 69 1-2 per cent. which are of incalculable utility to the citizens generally, independent of the great additional security to the mails. The daily transportation by stage has increased 2427 miles, and the whole daily transportation has increased 3950 miles.

§ Of which it is carried in stages 2,280,252——in sulkies and on horseback 2,682,264.

Port Folio.

SHIP CHANNEL TO GEORGETOWN.

The Corporation of Georgetown have adopted measures for restoring their Ship Channel, which had become obstructed by flats and shoals, a short distance below the Town. Thomas Moore and David Newlin have contracted to put certain Wings and other works into the River, so as to confine the current, and cause it to sweep along the shore of the City of Washington, where the bottom is soft, and easily moveable by an encreased motion of the water. They are to complete the works this season and to support them for two years, for 2000 Dollars. If at the end of that time there shall be fifteen feet water, from the Eastern Branch up to Georgetown, they are to receive 2000 Dollars more;—if there shall not be fifteen feet water throughout, they are to expend, from their own funds, a sum not exceeding 3000 Dollars, in additional works and labour to attain that object. The Corporation of the City of Washington have concurred in the measure, and sanctioned it by a public Act. Its success can hardly be doubted, and it is confidently expected that very important advantages will result therefrom, both to the City of Washington, and to Georgetown.

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THE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

Vol. I.] *Georgetown, Ca. Sept.* 26, 1810. [No. 7.

QUERIES ADDRESSED TO THE EDITOR OF THE AGRICULTURAL MUSEUM.

Query 1. Are your Citizens, Planters and Farmers, sufficiently aware of the importance of saving, making and using manures? It may be laid down as a general principle, that every mode of cultivation which does not employ these great fertilizers, will ultimately impoverish the land, render the crops smaller and smaller, make the cultivator move on the descending scale, and turn his farm into a *sinking* fund. On the other hand, where manures are largely applied, and the lands judiciously cultivated, they become more and more productive every year, and the cultivator goes on increasing his property like the accumulations of compound interest. In a bad mode of cultivation, the crops are eventually diminished, while the expences continue much the same, or are perhaps increased, until the latter entirely swallow up the former. But in an ameliorating culture, the produce continually increases, while the capital (that is the quantity of land) continues the same, the labour and expences become less and less in proportion to the produce, and the clear gains of course greater and greater. What a contrast between the two modes! How vast the difference both to the individual and the country!

Query 2. Is the value of Ashes, especially of leached ashes, as a manure well understood? I have known 8 Cents a bushel given for drawn ashes, by experienced farmers, and they declare it to be at that price a cheap manure. It requires but little labour in carting and putting it on the land, to what an equally efficacious quantity

of Barn-yard manure does —Its effects are great and singularly durable. It is applied with decisive benefit to Indian Corn, Rye, Wheat, Clover and Turnips. A sprinkling of ashes over old grounds of moderate quality, will produce large crops of Turnips of excellent flavour.

Query 3. Might not much more orcharding be profitably introduced on many farms in your part of the country? This I should suppose would be particularly the case in the county of Montgomery, &c. Our orchard grounds in the Northern and middle States are exceedingly valuable. This year in particular the apples on farms of from 100 to 300 acres will, when simply conveyed to the distilleries, be worth from $ 75 to $ 250; and when the proprietors make the cyder themselves, the value will be increased. These orchard grounds at the same time afford rich pasturage, a good burthen of hay, or a valuable crop of grain. The increase of orcharding would naturally bring with it an increase of distilleries, the business of distilling cyder would be carried on to greater perfection; and finally the liquor thus manufactured would prevent the importation of immense quantities offoreign spirits.

A distant Correspondent.

Extract from Lord Somerville's Essay on Sheep.

Continued from page 92.

As to distempers, I know of none to which this breed is peculiarly subject. It has been said, that they were subject to constant foot rot; it is infectious, if sheep once affected are suffered to remain long in the flock; but originates in the corrosive properties of the night dews and exhalations arising from them, as I judge, and not from animalcules, as some have supposed. In Spain the flocks are never let out of the fold to feed, until the departure of the morning dews, which are deemed pre-

judicial to sheep, and may in part occasion that well-known disorder, the rot in the liver. There is little doubt, that it is the immediate occasion of the foot rot, which, in this climate, rarely makes its appearance before St Bartholomew's Day (the 25th of August), when the dews usually begin to make their appearance, as is expressed by the old adage—"St. Bartholomew brings on cold dew." The remedy, if instantly applied, is certain;—a caustic wash rubbed in between the hoof, will stop the stripping of the skin, and the horn of the hoof toward the toe being cut away (so as to see the clear transparent horn), leaves no room for this fœtid substance to get hold of the foot. Great care must be taken, not to cut away the extreme point of the hoof called the "toe-vein," because it deprives the foot of due circulation of the blood; in other respects, the foot cannot be pared away too close: when the corrosive styptic has been rubbed in, let the sheep be kept in a dry place, to allow the remedy to have its due effect; and separate the stripped and lame sheep from the flock for two days, and the disease will disappear: if it is to be seen for more than forty-eight hours in the same animal, it is generally the fault of the shepherd. The disease has been supposed inherent in the land: I am of opinion this is not the case, because I know that land, supposed to be deeply tainted, has lost (judging from the sheep depastured on it) all vestige of the disease, although unbroken, and not even manured on the sward, which happened to be very old. On that part of the author's farm on which the Merino sheep usually depastured, the foot rot prevailed to the greatest degree when occupied formerly by the heavy long-wool sheep of that district; it has been completely subdued for several years.

They are subject to no constitutional disease, from which other breeds are exempted, after the lambs have weathered the first three weeks, and even during that period, only from the shortness of the wool when first dropped, a difficulty to which all fine-woolled sheep are

subject.§ But it requires no remedy beyond that common caution practised by all the careful flock-masters of South Britain, namely, without shutting up the ewes and lambs in close confined buildings, which are injurious, to drive them into some sheltered homestead, out of the reach of the cutting blasts of wintry winds and drifting snows, which even in the southern parts of our island, make dreadful havoc where flocks have been left so exposed. I know of no farmers more attentive to this substantial good husbandry, than the farmers of the South Downs. In Spain the sheep are carefully housed during the night, or in cold raw weather, for some days after shearing; they are sweated a day or two before this operation, to make the wool part well from the body, and, perhaps, to add something to the weight. If, in one uniform temperature of climate, this treatment is essential to the health of sheep, and beyond a doubt it is so; how much more is it necessary in the variable and uncertain climate of Great Britain? Yet numbers of us have never given a moment's thought, to what we may suppose would be self-evident to men of any capacity whatever; although we cannot command a temperate or steady climate, much of its severity may be counteracted by cheap and simple means. In the mountainous or hilly districts, essential benefit to the wool may be derived from attention to aspect and elevetion, as well as soil; and where this attention has been paid, wool is of a superior quality. It is also familiar to every farmer whatever, that the value of the carcass is much influenced by an attention to this circumstance; by stocking the higher ground in summer, where fresh air may be found; and low, well sheltered lands, lying to the south,

§ Nature seems to have guarded with peculiar care this race, as if conscious of the value of what in her bounty she was giving to man; for, strange as it may appear, it is no less true, that when they are first dropped, the lambs are covered with a long down or hair, which, in the period of a month, falls off, and is a sure prognostic of the finest quality of wool. Whether this extraordinary covering is thicker, or more frequently found in cold climates than in warmer ones; or whether it classes them thus next in gradation to the Lama, or those other animals which, under a hairy covering, carry that downy wool so celebrated in Asia, is a question rather for the naturalist than the husbandman.

when winter advances; but though known, this is for ever neglected in practice.

Sheep, in some vales, particularly of the southern and western districts, where inclosures are small, and the circulation of fresh air impeded, will pay little or nothing during the summer months, let the keep be ever so good, owing to the heat and that instinctive terror which they have of the maggot or blow fly. In the three winter months again, all men consider themselves fortunate, if their store flock lose nothing in condition. Reasoning on our own knowledge, and on facts long established, need any stronger argument be adduced to show, how, attentive we must hereafter be to such a system, if we had not at this hour, sheep in every part of the kingdom dying by thousands, of cold and want of keep? It is cheaper to feed the outside than the inside; yet plain as all this seems to be, the practice is rarely, if any where, to be found but in Herefordshire: therefore it is, that the Ryeland is next in quality to the Spanish wool; and Spanish writers themselves confess it.

It must not be supposed, that I am suggesting costly buildings for the purpose of cotting sheep in the night time during cold weather; two objections arise to them; they are not moveable, and may want fresh air, unless high and large, for air and warmth are equally necessary to sheep at these seasons. Nothing can be more simple than that cot or covered fold I wish to recommend for general adoption during the cold months.

A circular wall 12 feet high, inclosing an area of 40 yards diameter, and on the inside of this wall, a shed, the roof of which slopes inward with an easy descent to 6 feet, will completely shelter a flock of many hundred sheep; as may be seen on the farm at Crawley, near Woburn, the property of his Grace the Duke of Bedford.

Another fold yard for sheep is to be seen at Betshanger, near Deal, in Kent, composed of the cheapest and rudest materials, situated in a deep chalk-pit. The excellence of the South Down flock occupying it, contrasted with the œconomy of its accommodation, cannot fail to

do credit to the good sense and good management of Mr. Boys, who farms it. Where snow is likely to be drifted, such pits should be protected by a mound or bank round the top; this precaution would be requisite also as a security to stock depasturing near it.

In Herefordshire, corn-stacks are the sheds under which the Ryeland sheep seek for shelter; this also is a profitable and economical arrangement, because the staddles must be built high enough to keep the corn out of the reach of vermin, and the height which is sufficient to effect this purpose, is ample for the shelter of a flock of sheep.

Two frames, one of them fastened to the back of hurdles, either round the fold, or if only half round it, on that side where the wind is, and the other forming a penthouse, or cover, towards the inside of the fold, resting on a pole of four or five feet in height, with a declivity of fourteen or fifteen inches, to allow the rain to run off, will give sheep all the protection they require, will keep their fodder dry, and will allow them to seek fresh air when they want it. These frames may be made of five poles, each eight feet long, and at fifteen inches distance from each other; may be bound with withy or rope yarn, to reeds, long straw, or any light substance, which will turn wind and rain; by the help of a light drag on four low wheels, these and the hurdles may be moved from place to place, and set up again in as little time as, without such a carriage, is required to change a common fold. The convenience and trifling expence of such cotting, must defeat every objection to a system which ought long ago to have been in general adoption throughout the island; it is possible that, by a sudden change of wind, when blowing hard, these sheltered hurdles may be thrown down occasionally, and sometimes broken; but they may be replaced at a trifling expence. No other objection worthy of notice occurs to their general use.

In Scotland, and the northern counties of England, where most wanted, it is to be regretted that covered folds are rarely, if ever, to be found.

Not a shadow of doubt rests with me, that in the course of a few years, under such management, whatever the breed of sheep may be, the wool of the young stock will be much improved in quality, and the carcass kept up at a reduced expence. [*To be continued.*

For the Agricultural Museum.

At a meeting of the Culpeper Society, for the promotion of Agriculture and Domestic Manufactures, held at the Court-house on Saturday the 1st of September, 1810, the following gentlemen were elected officers of that institution:—

President,	PHILIP ROOTES THOMPSON.
Vice-President,	BIRKETT DAVENPORT.
Treasurer,	JOHN M'NEALE.
Secretary,	DAVID JAMISON.
Assistant Secretary,	WILLIAM M. THOMPSON.

Report of a Committee appointed by the President of the Culpeper Society, for the promotion of Agriculture and Domestic Manufactures, held at the Court house on Saturday the 1st September, 1810.

To Mrs. Sarah Ann Norris, for the most approved Cotton Counterpane, a premium of Ten Dollars.

To Mrs. Sarah Ann Norris, for the most approved Cotton and Yarn Counterpane, a premium of Ten Dollars.

To Miss Elizabeth Shakelford, for the most approved piece of Cotton Cloth, for vests and breeches, a premium of Ten Dollars.

To Miss Elizabeth Hilton, for the most approved pair of Cotton Stockings, a premium of Five Dollars.

Three other Cotton Counterpanes manufactured by Mrs. Sarah Woodville, although not entitled to a premium, do in the opinion of the Committee, great credit to the owner. Teste,

DAVID JAMISON, *Sec'ry.*

Sweden, discovered that arsenious acid (white arsenic of the shops) when combined with copper in the state of oxid, afforded a green pigment, designated by the name of Scheele's green; the process has been employed in this city with much advantage (in the manufacture of some hundred weight) and sold under the name of *patent green*.

Scheele's green is usually prepared by mixing *white* arsenic, with a solution of potash, and adding thereto a solution of *blue* vitriol. The pigment when washed, to free it of sulphate of potash which is formed, is of a beautiful color, and very durable in all kinds of painting. Brunswick green, a paint formerly in much esteem in Europe, is, it is said, far inferior to Scheele's green, which is also prepared of copper.

Having stated these few facts, which are connected in some measure with the subject under consideration, we shall proceed to consider some circumstances relative to a process of preparing verdigrease in this country, where the stalk or the refuse matter of the grape cannot be had in sufficient quantity.

Copper may either be corroded by the action of vinegar, and thus form verdigrease, by long boiling and frequent exposure to air; or it may be converted into this substance by exposing it in the same manner, and in similar circumstances, as that of corroding plates of lead in the forming of white lead. For the latter purpose, copper plates (old sheathing copper, or any old copper) are to be rolled spirally, so that the space of an inch shall be left between each circumvolution; which must be placed vertically in earthen pots of a proper size, containing good vinegar. These copper rolls ought to be supported in the pots, that they may not be in contact with the vinegar; but that the acid vapor may circulate freely, between the circumvolutions.

The pots are to be covered and placed in a bed of dung. The vinegar being thus exposed to the constant and uniform temperature of a dung heap, suffers a slow, though continual evaporation, and attaches itself to the surface

of these plates, which is penetrated. The metal is therefore corroded, and on taking out the corroded matter, (if necessary to be levigated and washed) the quantity of verdigrease obtained will far exceed the quantity of copper employed. Should the copper plates be too thick, the verdigrease will have to be removed from time to time to facilitate the process.

I have been thus more minute in my explanation than I would otherwise have been; but knowing that so important a branch of manufacture in this country, must interest our attention (for the reasons already given) and render us completely independent of Europe in this article; the material of which is found in so great abundance in our country. The retail price of verdigrease, at this time, is $ 2, 50 to $ 3 per lb.....*Aurora*.... PYRO.

To the Editor of the Agricultural Museum.

Haw Thorn, Frederick County, Va.
September 14, 1810.

Dear Sir,

About two years since, a society was formed in this county, to encourage Domestic Manufactures, and improve our breed of Sheep. Before this, little attention had been paid to either of those objects. Some families had made coarse clothing, and a few of our farmers had made some slight efforts to improve their flocks; but the most of us viewed our sheep as a stock of little value, and ran to the stores for all our clothing.

The restrictions imposed on our commerce, by England and France, opened our eyes. We saw and forcibly felt the necessity of cultivating our own resources, and thereby lessening our hitherto thoughtless dependence on foreigners, for those comforts and necessaries of life, which were so entirely within the reach of our own means. The trial has taught us a lesson as valuable and instructive, as it was unexpected. Many of us have *forever* banished from our use every foreign article of clothing, and are now *better* dressed than we ever were be-

fore, with the proud, consoling recollection, that our clothes are made of American materials, and in our own families.

The first meeting of our society to award premiums, was held on the 22d May, 1809, when Mr. RICHARD K. MEADE, was the only member who had a Lamb, that he was not ashamed to show. He exhibited one that weighed on foot 159 lbs. and produced a fleece of 9 lb. 6 oz. of washed wool. He is a descendant of Bakewell, that took the first of Mr. Custis's prizes.

On the 21 May, 1810, the second annual meeting was held, when the following lambs were shown:

	Weight on foot.	Fleece.	
	lb.	*lb.*	*oz.*
Mr. David Ridgeway's Lamb, (Tom Tackle),	180	9	12
Richard K. Meade's do.	156	9	
Dr. Robert Mackay's do.	169	8	8
Mr. Philip Nelson's do.	160	8	8
do. do. do.	134	8	8

The fleeces from those lambs were weighed in the dirt, they were however unusually clean. Mr. Ridgeway, and Dr. Mackay's lambs are about quarter blooded Barbary. The others are, I believe, from Mr. Custis's Bakewell.

Mr. Ridgeway weighed a couple of his lambs, not long since, at five months old. They are twins. One weighed 115 lbs.—the other 116 lbs. They are descendants of his prize ram, Tom Tackle, who was permitted to go to a few ewes last fall.

The wool of the Barbary sheep which we have amongst us, is vastly superior in point of quality to our native wool.

At the last meeting a variety of fine woolen, cotton and flaxen cloths were exhibited, that did honor to our country. I will give you an account of them a few mails hence. I am, &c.

Lawrence A. Washington,
Sec'ry. to the above Society.

ARTS AND SCIENCES.

The Society for the encouragement of Arts, Manufactures and Commerce, at their annual meeting in London, in May last, distributed, in rewards to meritorious candidates, 9 gold medals, 14 silver medals, and 225 guineas. The Society consists of 1500 members. The successful candidates were severally rewarded for having planted 30,000 large trees, 30,000 beach, and 10,000 fir;—having gained 524 acres of land from the sea; for preparing from the fibres of the common nettle, thread and articles resembling flax, hemp, tow and cotton—for a screw adjusting plough—for an improved reaping-hook; for extracting turpentine from fir of English growth—for various paintings—an improved threshing machine—for a mathematical dividing engine—a machine to ascertain the velocity of machinery—for a method of making every ship's boat a life boat; for constructing sash windows so as to be cleaned and repaired within the house—for a compensation pendulum—for spring crutches—for inventing implements, by which persons, who have lost their hands, may usefully assist themselves; and other inventions and improvements.

MERINO SHEEP.

The following facts relative to the recent importation of Merino Sheep at this place and New-York, have been communicated to us by a gentleman, whose sources of information are entitled to perfect confidence.

The number of Merino Sheep imported from Lisbon within the last month, may be justly considered as matter of astonishment, by those who recollect the difficulties which were stated to exist in procuring those animals; it will therefore be gratifying to be informed of the fortunate event, which has been the cause of a much larger supply, than the United States could have expected, and than could ever have been procured by the greatest exertions, if that event had not occurred. It will also be beneficial to know what number may be relied on, to

prevent erroneous calculations, by those who are interested in the breeding of that most valuable animal.

It is generally known, that in consequence of a decree of the Supreme Government of Spain, the estates of Don Manuel Godoy, the Prince of Peace, were confiscated, and that on some of these estates were the best flocks of Merino Sheep in Spain; the two principal, that of the *Convent of Paular*, sold by the Carthusian Friars to the Prince in the year 1796, and that of *Arguirres*, raised from the Imperial Flocks of Charles the Vth, were of the best breed, and a large proportion of these have been sold by the Supreme Junta of the Province of Estremadura, to the British Commissary General, and to the American Consul, from whom purchases have been made for this country. Nearly all those purchased by the British Commissary General, have been sent to England, and the whole number secured for the United States does not exceed 3000, of which 1800 have already been imported. Experience shews us that upon an average 1-5th are lost before they are on the lands of the purchasers in this country, (including those lost on the voyage, which in many instances has been 1-8th) there will therefore remain about 2400 for the supply of the whole of the United States, to which may be added, perhaps 300 of a good breed procured from Cadiz and its vicinity.

The recent importations are all accompanied with a variety of well authenticated documents, so as to leave no doubt of the breed being as represented, and it is much to be feared, that such a brilliant opportunity of benefiting the Woolen Manufacture of the United States will not again offer. *Comm. Register.*

A new Method of assaying Copper Ores.

By GEORGE FORDYCE, *M. D. F. R. S.*

From the TRANSACTIONS of the ROYAL SOCIETY of LONDON.

Process. Take 100 grains of the ore, powder it finely, put it into a small matrass or a glass phial, pour upon it

half an ounce of nitrous acid, of the strength commonly sold by the name of *aqua fortis*, (that is, the pure acid diluted with about four times its weight of water), and half an ounce of muriatic acid, sold by the name of spirit of salt. Place the vessel in a sand-heat; or, if you have none, an iron pot or fire-shovel, with sand, may be put over a common fire, and the matrass or phial set in it. Raise a moderate heat, an effervescence will take place, for the most part; when this ceases, increase the heat until it is renewed, and so proceed until the liquor boils, which is also to be done if no effervescence takes place; boil them together for a quarter of an hour.

Remove the vessel from the fire, and let it cool, then pour into it two ounces of water, shake them together, and let them stand till the liquor is clear; pour the clear liquor into a bason where it may be preserved.

Add to the *residuum* a fresh half ounce of each of the acids, and proceed again in the same manner, mixing the clear liquor with that procured by the first process.

The same operation is to be repeated, until the fresh acids acquire no tinge of blue or green.

Dissolve half a pound of mild fixed vegetable alkali, commonly sold by the name of salt of tartar, in a quart of water. Purify the solution, either by filtration, or by letting the impurities subside and decanting the liquor clear into a glass vessel. Pour the solution of the alkali slowly into the bason containing the fluid procured by the former processes, until the whole matter be precipitated from the acids.

Add, by a little at a time, as much vitriolic acid, commonly sold by the name of oil of vitriol, as will re-dissolve the whole, or only leave a white powder; if there should be any such powder, which is seldom the case, it must be separated by filtration.

Having the liquor in the bason now clear, put into it a piece of iron, bright and free from rust, and at least an ounce in weight, and leave them together for twenty four hours; the copper will be found precipitated, prin-

cipally on the surface of the iron, and sometimes in a powder at the bottom of the bason.

Decant the fluid from the copper and iron, with great care, into another bason, so that as little as possible, or none of the copper be carried along with it.

Wash the metals in a pint of water; let them subside perfectly, and pour this water into the second bason, with the same care.

Repeat the washing three times: if any copper be found in the second bason, let the washings stand in it for half an hour, so that the metal shall subside; decant the fluid carefully off, and return the copper into the first bason. Pour upon the copper and iron one ounce of vitriolic acid, and two ounces of water; let them stand together for a quarter of an hour, or until the copper shall be easily separable from the iron. Separate the copper from the iron, taking great care that none be lost; the remaining iron may be laid aside. Pour the acid from the copper, after it has subsided, into the second bason; wash the copper with a pint of water, and repeat the washing three times, as before directed.

Great care is to be taken, in decanting both the acid and washings into the second bason, that none of the copper goes along with them; lest any should, they ought to stand for half an hour in the second bason, and be decanted from it also with care; and, if any copper is found at the bottom, it is to be washed, and added to the rest.

The copper is now to be dried and weighed, and gives the proportion contained in the ore.

To be Continued.

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OMNIS FERET OMNIA TELLUS. VIRG.

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A new METHOD *of assaying* COPPER ORES.

By GEO. FORDYCE, *M. D. F. R. S.*

From the TRANSACTIONS of the ROYAL SOCIETY of LONDON.

Observations on the above Process.

[Concluded.]

It is about twenty years ago that I contrived some methods of assaying ores, which might avoid tedious and troublesome roastings and fusions in great degrees of heat, which require a dexterity that is only to be acquired by great practice, and which, after all, form a process that is often various in the result, and seldom shews the substances contained in the ore, excepting the metal. The principles on which these processes depend, as far as regards copper ores, are,

First. Metals are attracted more strongly by acids than by sulphur, with which they are often combined in their ores. In consequence, if a metal be combined with sulphur in an ore, it may be separated by applying an acid, which will unite with the metal, and separate the sulphur. The metal may generally be separated from the acid, in its metallic form, by means of another metal which attracts the acid more strongly.

Secondly. Arsenic unites with vitriolic, nitrous, and muriatic acids, forming a corrosion or compound not soluble in water; whereas, most other metals may be united with one of these acids, or a mixture of them, so as to form a compound soluble in water: therefore, if

there be arsenic combined with a metal in an ore, if it be dissolved in such acid diluted with water, the arsenic will fall to the bottom in a white powder, or in crystals, and the solution, being poured off, will contain the metal, which may be separated from the acid by another metal, as before.

Thirdly. The calces of metals may be dissolved in acids, whether they be pure (of which there are few instances in ores) or combined with gas, respirable air, or other vapours: therefore, if the metal in an ore be in the form of a calx, we may find an acid which will dissolve it, and we may afterwards precipitate it in its metallic form, as before.

Fourthly. When an ore is to be assayed, it should be separated from the quartz, spars, and other earthy matters, with which it is often mixed, as perfectly as possible; however, after all our care, there will often be a part of them so intimately mixed with the ore, that it cannot be entirely cleared. Many of these earthy matters do not dissolve readily in acids: therefore, if the metal of an ore be dissolved in an acid, so as to form a compound soluble in water, the solution of the metal may be poured off, leaving such earthy matters behind.

Fifthly. If the earthy matter should dissolve in the acid, it is seldom to be precipitated by a metal: therefore, if both earth and metal be dissolved, on the application of another metal, which attracts the acid more strongly, that which was combined with the acid will be precipitated, and the earth left in the solution.

Sixthly. Acids attract the metals with different powers: therefore, if two metals be combined with an acid, if we apply to the solution a mass of that which attracts the acid strongest, the other will be precipitated. The mass being weighed before and after the precipitation, the difference will be the quantity of additional metal dissolved: if, therefore, we pour off the liquor from the precipitate, and apply another metal, which attracts the acid still more strongly, the second metal will be precipitated; which, being weighed, and the weight lost from

the mass deducted, gives the weight of the second metal. As this principle is of great use in investigating the elements of mixed metals, we shall give an example. Suppose copper and silver mixed: dissolve the whole in pure nitrous acid, properly diluted with water; apply to the solution a mass of copper, the silver will be precipitated. Pour off the solution, and wash the silver and undissolved copper with water; pour the washings into the solution, weigh the mass of copper left, and mark what it has lost; apply to the solution a mass of iron, the whole copper will be precipitated. Pour off the fluid, and wash the precipitate carefully, dry it and weigh it; deduct the weight lost from the mass of copper, what remains is the weight of the copper in the mixture; if this weight, together with that of the silver, be the weight originally exposed to examination, there is no reason to suspect any mixture of another metal.

If the metals mixed are unknown, if we can find an acid which will dissolve them, we may try to make a precipitation with the metal which is lowest but one in the order of elective attractions, and so proceed to the next above it, until we come to the highest; and, by this means, we shall obtain all the metals in the mass.

There are other principles on which I have founded various processes for assaying, but these are sufficient for copper ores; all the different known species of which I have actually assayed, and therefore have ventured to offer the consideration of this process to the society; first, as only requiring an apparatus which can be bought at any apothecary's or chymist's, and capable of being performed by a person totally unacquainted with chymistry, so that any proprietor of an estate, or his servant, may determine if an ore be of copper, and its value; secondly, as affording an assay master a more perfect manner of determining the value of a copper ore; and lastly, as a process by which the naturalist may investigate, not only the copper in an ore, but its various other contents.

There is but one known species of copper ore in which the copper is not capable of being combined with

aqua regia, that is, blue vitriol, which is sometimes found solid, but more frequently in mineral waters; from this the copper may be precipitated by iron immediately.

We have lately had many opinions published, of metals being found in mineral waters, combined with various substances. I never examined any mineral water in which I found the metals combined with any substance but vitriolic acid; and am certain many authors have been misled, by not knowing this property of metallic salts, *viz.* that if we dissolve them in a small proportion of water, or if there be superfluous acid, the solution will remain perfect when exposed to the air; but, if the acid be perfectly saturated with the metal, and the proportion of water to the metallic salt be very great, on exposure to the air it is decomposed, the metal precipitating in the form of a calx, and the acid being lost. This may easily be tried, by taking common green or blue vitrol, dissolving an ounce in three ounces of water, by boiling, letting them stand to cool, and filtering the solution. If this solution be exposed to the air it will remain perfect; but, if we drop a drop or two of it into a wine-glass full of water, in a few minutes the transparency of the water will begin to be disturbed, and the metal in a short time will fall down, in a red powder if it be iron, in a blue powder if it be copper.

An hundred grains of the ore is sufficient to give the copper contained, to one hundredth part; if greater accuracy be required, 1000 grains may be used.

The mixture of nitrous and muriatic acid is the most proper acid *menstruum* for copper ores; muriatic acid dissolving most readily the calces of metals, and nitrous acid when they are in their metallic form; a metal in its metallic form being a compound of a pure calx and a substance which has been called inflammable air, but which is an oil, found out by Stahl to exist in metals, and which we would call the oil of metals. The nitrous acid decomposes this oil, at the same time that it acts on the calx itself, and leaves it also to be acted upon by the muriatic acid.

When copper is combined with sulphur in an ore, it is in its metallic form; in dissolving in an acid, its oil rises in vapour; or vapours produced by the decomposition of this oil occasion an effervescence.

All the calces of copper I have tried are combined with gas, respirable air, or other vapours, excepting one, which is of a light green colour, brittle, and which breaks smooth like glass; a specimen of it is contained in Dr. Hunter's museum: this dissolves without effervescence, the others all effervesce. A boiling-heat is necessary to render the solution complete, of which great care is to be taken.

If there be any sulphur in the ore, it appears quite clear, in lumps; a small portion of it, however, is destroyed by the nitrous acid. Earthy matters insoluble in acids, if any, and arsenic, appear in a powder at the bottom. If there be any silver, it is mixed with this powder, and is to be extracted by melting it with black flux and litharge, and cupelling in the common way. If there be any gold, it may be taken out of the solution by æther.

When the copper is combined with nitrous and muriatic acids, it might be thought sufficient to apply the iron immediately; but it is much more convenient to precipitate it from them, and combine it with vitriolic acid, on account of the convenience of washing the precipitate, which is in a more compacted mass.

If there be any calcareous earth dissolved, the vitriolic acid will combine with it, and form a white powder, which will be left after the copper is re-dissolved, and be separated carefully from the solution.

After the precipitation of the copper, it is necessary to get rid of the salts perfectly, before we apply the vitriolic acid; otherwise part of the copper would be re-dissolved.

Vitriolic acid will not dissolve copper in its metallic form, and may be applied to dissolve any iron that may be mixed with the precipitate, as well as to loosen copper, which sometimes adheres to the iron.

The solution of the iron must be carefully washed off from the copper.

There is a criterion by which we may judge certainly if any of the copper be lost. Let all the washings, and every thing, except the copper, be put into a vessel together; pour in solution of fixed alkali, until no farther precipitation takes place; let the precipitate subside, and pour off the liquor; apply to the precipitate solution of volatile alkali, sold by the name of spirit of *sal ammoniac*; shake them together, and let them stand for an hour: if the solution of the alkali acquires a purplish blue colour, the process is imperfect, if it does not, it is perfect.

If the process be imperfect, which is always for want of care in the decantations, pour in as much vitriolic acid as will dissolve the whole precipitate, apply iron to the solution, the remaining copper will be procured.

Extract from Lord Somerville's Essay on Sheep

Continued from page 103.

Lest it should be surmised, that the facts here stated, and the conclusions which every judge of sheep will thence be led to draw, should have been formed on a scale of practice too confined, it is adviseable to suggest, that the flock consists of 340 breeding ewes, and the whole produce at two years old, is fatted off, with the exception of such draft ewes as may be sold for stores §; consequently the number of the sheep is from 1000 to 1200; a

§ It has been deemed the criterion of a good and profitable breed of sheep, to ripen early, because there is room to multiply such breeds, far beyond those of slower proof. If a sheep can come to market at two years old, his fleece will be long enough for our manufactures, and not sold at an inferior price as skin wool; much before this period, it would be unfit. The growth of any high-proof breed of sheep, is far greater the first and second than the third year; therefore it may be urged that more profit can be had from the animal at this time, than at any later period, its growth and fleece considered. If attempts had been made to bring into general use a breed of sheep, whose fleeces were of value, but incapable of getting fat, we should be receiving with one hand, what we were throwing away with the other; no general benefit could result: but when we bring sheep bearing such heavy fleeces, and that wool capable of making broad cloths and kerseymeres, of quality sufficient to obtain the Bath Society's premiums, and of a proof or aptitude to fatten equal to, if not exceeding any short-woolled sheep we have, the principle is no longer to be controverted; it must be considered a breed of extreme value.

scale not of the largest, but still large enough with safety to warrant any inference that may be drawn. The lambs are dropt in the vale of Taunton, and continue in it during the first summer. The store flock is summered a short distance from thence, on the hills bordering on Exmoor Forest. The contrast of climate must be remarkable, because there is a difference in the time of harvest of a month: our feeding sheep are then grazed in the exposed, but rich marsh of Bridgewater, long celebrated for its good beef and fat oxen; or finished in turnips and winter vetches in the vale. We had reason to fear, in either case, that the strength of keep might open the pile, and give a coarseness to the wool, as well as to the grain of meat; but the event has destroyed such fears, insomuch that we had no scruple in sending some wether lambs to winter in the marsh, using the precaution to cott them during the severe winter-months; and although this land had the character of being too strong, and of scowring lambs, even to the danger of losing them, we found the mixed breed able to endure it, and thrive surprisingly. § Whether as an article of food for those, who are robust, or those, who are delicate, even at the early age of 18 months, when mutton is usually thought indifferent, it is nutritious and exquisite in flavour. There is a firmness in the spine fat; a richness and deep colour in the gravy; and a fine texture and tenderness in the grain, which must command customers, and ensure to this breed the good will of butchers, wherever they may be situated. There are two parties to be considered, the seller and the purchaser. We have had occasion to note, how essential a ready sale is to every article of produce, and that this circumstance, in great part, tended to enforce the necessity of a change of breed. These diversities of soil and climate, unequalled, probably, within the same space of ground, enable us to speak with a confidence, it would be presumption otherwise to do; because together they embrace all those

§ They did well until the end of December, when, keep getting scarce, the grounds were bare after a fresh bite in February.

leading varieties, which, some certain spots excepted, are to be found in the whole United Kingdom.

The quantity of stock hereafter stated to run *per* acre, may appear great to many persons: some may be disposed to doubt the facts. Every possible precaution to ascertain them, has been taken, and to speak with as much accuracy as can be, where we are to reason on an average. My wish was not to deceive myself: I trust it is not in my nature wilfully to deceive others. The Ryeland sheep, alluded to, were summered at 2*d* each per week by my own tenant that season; we know the fact to be correct, which he has repeatedly confirmed by declaring, that it was the exact average *per* acre. In the marsh, such a stock, in point of numbers, of fat and store sheep, has been carried, as would be found almost to exceed belief. The fatting wether-hogs and draft store-ewes, which must be, to make the most of them, kept as high as fat sheep, amounted to more than four *per* acre, during the six summer months; the store ewes amounted to more than two *per* acre, and were large, strong, South-down ewes, of Mr. Ellman's blood, in all more than six *per* acre, besides refuse-lambs, &c. &c. and nothing could exceed their proof. In the winter of 1800, the Vale estate carried, from the beginning of September, to the first week in June, 700 store-sheep, about 250 lambs included, on one hundred acres of pasture land, of which sixty were indifferent, and forty as good pasture land as could be seen: the ground carried more stock; probably from the mode of depasturing. Where sheep work in the fold, they must run in large lots; and some loss *per* acre in the stocking may be incurred, because the profit of the fold is great; but where folding is not practised, and the country much enclosed, sheep should be stocked in small parcels, thin on the ground, and frequently changed: the land thereby is not stained, and one lot follows another in perpetual succession. Every judge of stock knows the value of change, even, occasionally, into worse keep. It is our fixed belief, that we can carry six and a half Ryelands, *per* acre on

land (free of any local consideration) worth one guinea and a half *per* acre, with the help of some turnips and pease-haulm in the dead winter months; and that with judgment in the manner of stocking, we shall neither push them beyond their growth, nor make them meat for the butcher, but shall maintain them in healthy store-state. On the same land, and under the same circumstances, we can carry four South downs, or their cross, and somewhat more *per* acre. If our Ryeland ewes will fatten to twelve pounds *per* quarter, our South-downs, will reach nearly eighteen; the rate of stock *per* acre, will, therefore, be found the same in proportion to the size §. The quantity of good mutton and wool *per* acre, must be the only test of good or bad management: it is on the increased stock of South downs, which his estate in Norfolk now carries, that Mr. Coke prides himself. A noted husbandman from Nottinghamshire is said to have declared, that he never before saw an estate so stocked.

The South-down stock, which is now reared on a farm of the Duke of Bedford, called Maulden, in Bedfordshire, the nature of the land considered, will be found to exceed that which belongs to myself. A very few years ago, great part of this estate was wild, unproductive heath, valued at 2*s*. 6*d*. *per* acre. A Norfolk farmer was invited to take it, but declined any engagement, at any price. Four hundred acres of it have been broken up. Its situation was such as to preclude all extra manure, therefore the estate is making itself by the sheepfold; it now carries 400 breeding South-down ewes, the stock amounts to 1200, and the fat sheep finished on the same: there remain about 150 acres only of heath to break up, at which time the estate will carry 1600 sheep. The South-down stock is large in size, and of the first-rate quality; the land cannot now be valued at more than ten shillings, and the stock three, *per* acre, winter and sum-

§ The wethers of each breed will be, of course, some pounds heavier per quarter.

mer. We should rejoice to see any improvement more substantial, or more beneficial, than this; for it is to be remembered, that, in proportion as the sheep-stock increases, heavier and better crops of corn will be grown. The average of South-down store stock on Mr. Ellman's pastures at Glynde, he asserts to be four *per* acre; as his sheep are of the largest size, this rate of stocking will be found exactly similar to our own. He could not afford to starve his own sheep, because they are too valuable to make the difference of feed of the slightest consequence. [*To be continued.*

MERINO SHEEP.

At a late public sale, in the vicinity of New-York, 215 Merino sheep sold for 57,000 Dollars, averaging about 265 Dollars each; one of the rams was knocked off at the enormous price of 940 Dollars.

A Receipt for Dying Black without Verdigris.

For 40 hats, take 1lb. Roman or blue Vitriol pounded, and 1lb. pearl ash; dissolve them in a small quantity of water, taking care not to put the whole in at once, least it should ferment and overflow; this is to be used as Verdigris usually is, that is by pouring in the usual quantity of Copperas; and Logwood may be the same as when Verdigris is used. By this method a most excellent bright and glossy black may be made, equal if not superior to any made with Verdigris, and with considerable saving of expence, as verdigris at the present price, (3 dolls. per lb.) would cost at least one dollar fifty cents, whereas the above articles will not cost fifty cents...*Poulson's Pap.*

CHYMICAL MANUFACTURES.

Nothing can manifest the zeal in this branch of manufacture; in every quarter of the union new establishments are daily forming. We learn that near Thetford, Vermont, an immense body of what mineralogists term iron pyrites (sulphuret of iron) is found, which is manu-

factured into copperas. The establishment is new, and the quantity already manufactured is sufficient to supply the United States. Near the same town a quantity of galena (sulphuret of lead) has been discovered, attached to a brownish substance, which, by the examination of a chymist of this city, was found to be the carbonated oxid of zinc or calamine.

This mineral, with the copper which exists in the same neighbourhood, will, if found in abundance, prove of the greatest utility in the manufacture of Brass. The mines of Perkiomen, however, furnish both these materials.

A peculiar variety of lime-stone, found in Vermont, which may be called a chrystallized carbonate of lime, and which very much resembles specular gypsum, has been employed with success in agriculture. It was generally taken for plaster by the farmers; but, on examination, proved not to be a sulphate but a carbonate of lime.

We congratulate every friend of American manufactures, who undoubtedly should possess a zeal for so important and so useful an institution, if a spark of patriotic fire glows in their breasts, that by a uniform perseverance in the path already trod, we may be independent of foreign nations.

Aurora.

RALEIGH, (N. C.) AUGUST 2.

According to previous arrangement a meeting of the citizens of this place was held on Saturday evening last, for the purpose of receiving the report of the committee appointed on the subject of a contemplated manufacturing establishment. It is proposed to raise, by subscription, the sum of 20,000 dollars, in shares of twenty dollars each. Five commissioners have been appointed to receive subscriptions, with power to name gentlemen throughout the county for a similar purpose; and as soon as the money raised will justify it, the business is to be prosecuted with the utmost vigor.

Extract from an Essay on the Culture and Manufacture of Flax; read before the Culpeper Society, for the promotion of Agriculture and Domestic Manufactures—by JOHN STRODE, Esq.

I shall, at the present, confine myself solely to a small discourse, which is drawn entirely from my own experience, on the manner of cultivating and manufacturing that useful article, Flax, and which I will endeavour for perspicuity, to reduce to separate heads.

First, Of the kind of soil most favourable to its production, and the manner of preparing it.

2d. The time of seeding, quality and quantity of seed sufficient for an acre of Land.

3d. Weeding and the proper times of performing it.

4th. Pulling, curing, drying, and taking off the seed.

5th Rotting by water, and by dew.

6th. Breaking, skutching or cleaning.

7th. Hackling, combing and preparing for the wheel.

8th. Statement of the common produce and profit of an acre.

9th. Remarks on it comparative value with Hemp and Cotton.

First. *The Soil* which I have experienced to be most favourable to its production, is stiff clay or loom, rather low land or nearly flat, and inclining to be moist, which if not naturally very rich and strong, will require a large quantity of manure, and that to be put on, and worked in, the preceding summer by frequent ploughing and harrowing, or other working to prevent the growth of grass and weeds; for if they are suffered to grow up and seed, that seed will vegetate the ensuing season with the crop of Flax, and injure it much, both in quantity and quality. In preparing the ground, perhaps a crop of Tobacco, Corn or Potatoes, might be advantageously taken off; the latter I have mostly preferred. Early in the spring as soon as the frost is out, and the ground sufficiently dry, it should be ploughed up and in a few days crossed again, in which state it may remain until the day, or the

day but one, before it is seeded; then let it be well pulverized by running the big Iron toothed Harrow three or four times over it, until it be very fine.

2d. *Seeding*. The best season for which, is generally from the 20th March, to the 10th of April; if sooner, it is subject to damage from frost; if later, the heat of the approaching season, especially if attended with drought is certain to retard and so check its vegetation as to defeat entirely the future benefit of the most favourable weather. The best seed is full, round large grains, and of a bright shining colour; three pecks of which is fully sufficient for an acre; and ought to be covered in by running the light Harrow twice over it immediately after seeding.

3d. *Weeding* is indispensibly necessary to the perfection of Flax, and ought to be performed when it is about three inches high. Each person engaged therein, with a large strong knife in his hand, taking a given breadth before him, should proceed cautiously, with a watchful eye to observe the young weeds, and pull up by hand such as will readily come by the roots; those which cannot be thus eradicated, must be dug up with the knife. In ten days or two weeks, as occasion may require, the weeding may be repeated, very beneficially but greater care is then necessary to be observed, or the Flax may be too much trod on, bent down and injured.

4th. *Pulling*, ought to commence immediately before the seed is ripe; then not one hour is to be lost; indeed it had better be pulled up one or two days before the seed appears to be in full perfection, than remain neglected one hour after. As it is pulled, it may be tied in small bundles or sheaves, nearly the size of a man's arm, and set up about twelve or fifteen bundles together in a small stook—to cure; when perfectly dry the seed should be threshed or rather beat off, and the Flax well secured in a good house; or if built in a stack, neatly thatched all round, with rye straw. There is not any article of production in the whole business of husbandry more sub-

ject to receive damage from rain, or more difficult to be preserved in a stack.

5th. *Rotting* by water may be performed at any time, if occasion require, instantly as it is pulled, by steeping it in a large vat or pool of water; in the latter case, some rails or poles, should be put under the first layer, to keep it from the mud, and something of the same kind laid on top to sink it rather below the surface of the water; in this state it should remain until the hards or stem be entirely rotten, and until the lint or skin appears to the touch to be rotten also; and to an unexperienced person to be almost intirely spoiled; then is the proper time to take it out of the water, which, if in the heat of summer, ought to be done late in the evening of the day, and spread on the grass to dry; otherwise if spread out in the morning, the sudden approach of heat, if very violent, may much injure the strength, render it when drest very harsh, and give it a bad Sun-burnt appearance; whereas if it meets with a favourable, cold, cloudy and moist time, at the first part of spreading out, and so temperately dry by degrees, it will acquire great strength, be extremely soft and pliant when drest, and of a fine silver-like shining colour.

Rotting by dew cannot well be done during the hot season; the latter end of September, or beginning of October is the best season for that operation; for which the Flax should be carefully spread in rows on smooth ground, on short grass, or on the late sowed wheat field, to which it will do no damage, there it may lie for two, three or four weeks, according to the moisture of the weather, when it should be carefully turned, by running a long smooth stick resembling a pitch-fork handle under it, and so with great care turning over about three or four feet at a stroke. In about three weeks longer if the weather be moist, it may be sufficiently rotted; however before we proceed to take it up, trial of a small quantity is made at the brake; when we are convinced that it is sufficiently done, it is taken up by hand, and tied in large bundles with bands of wheat or rye straw; in

this last operation, great care should be taken to keep it straight, and all the root ends one way, and that it be housed as dry as possible.

6th. *Of Breaking.* For this operation the Flax should be perfectly dry, and for which purpose we frequently air it a little on a rack over a gentle fire; much firing will damage it. Of Flax of good quality, perfectly rotted and in good order, I have had upwards of 100 lb. broke by one hand in a day, who the next day has skutched or cleaned it from the hards, producing 25 to 30 lbs. fit for the hackle, or for market. Sometimes considerably more is done in a day, frequently less according to the quality of the Flax, and the manner of preparing it.

7th Of *Hackling* and Combing. To persons unacquainted, this part of the business may seem a very simple operation; but in fact, it requires as much practice to be perfect in that art, as any other operation in the whole manufacture of linen. Two hackles are necessary, a coarse and a finer; the teeth of both should be extremely sharp; and they should be kept bright and well polished. The mystery of hackling consists chiefly in knowing how to play the Flax on the points of the teeth of the hackle, and never suffering it to sink down among the teeth in the manner of combing, in which case great waste would ensue, and much of the better part pass off among the tow, but by keeping fast hold of the Flax near the middle, and cautiously drawing and working it over the points of the teeth, the fibres of the Flax are split and rendered fine. The operator ought to hackle but a very small quantity at a time, holding it near the middle very firmly. Flax for the stoutest linen ought to be passed slightly through the coarse hackle, and about one fourth taken out; and then for linen of finer quality, or for shoe or sewing thread, hackled over on the finer hackle, taking out nearly another fourth; to render the flax extremely fine, and to make but a small quantity of tow will discover the skill of the hackler. The tow which is extracted from the second hackling being of a better quality, should be kept separate from

the first; but each of them may be passed through the tow combs, something in the manner of combing wool, by which the finer parts of the tow are easily extracted and rendered extremely soft and fine, almost equal to the best part of the Flax, for the purpose of filling on a linen or cotton warp, but not so proper for warp, nor will it do for shoe thread or any purpose which requires great strength; what is left of the tow and cannot be drawn through the combs is called backings, and will only do to spin into filling for very coarse cloth, such as British brown rolls, but rather better in quality.

8th. A statement of one acre of good Flax; a very extraordinary crop I never yet have had.

Dr.

To rent of one acre Land, sufficiently rich and well fenced in,		$ 3 . 33
Ploughing 3 times estimated at	$ 1 . 11	3 . 33
Harrowing 5 times,	. 21	1 . 05
3-4 Bushel best seed,	1 .	. 75
Weeding twice,	. 67 1-2	1 . 33
Pulling, tying and setting up,		1 . 25
Beating off, and cleaning the seed,		1 .
Watering, spreading and taking up, &c.		1 . 75
Breaking and skutching 236lb.	. 5 1-2	12 . 98
Clear profit for balance,		16 . 30
		$ 43 . 07

Cr.

By 5 bushels seed, at	. 75	3 . 75
236 lb. of skutched Flax,	. 16 1-2	39 . 32
		$ 43 . 07

9th Beside the above profit of $ 16 . 30 my flax ground being ploughed the instant the flax is off, comes well in der for winter turnips, on which I count a further advantage, which cannot be made after cotton or hemp.

[To be continued.]

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THE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

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Extract from Lord Somerville's Essay on Sheep.

Continued from page 122.

The principle on which Sir Lawrence Palk conducts his sheep husbandry, needs only to be recorded; it will speak for itself. Part of his estate is rich land, improved by water (which heretofore ran to waste,) and lies low in the vale of Exeter: the rest borders upon Haldown. Instead of stocking the whole with the heavy bodied sheep of the country, which either must have been stocked so thin *per* acre as to pay nothing, or have dwindled in size, or have been starved, the estate now carries 500 breeding ewes; on the lower, 200 of the new Leicester blood, and on the upper part, 300 Ryelands, the produce of which have a large portion of the Merino blood.

As the winter advances, and the heavy bodied sheep go into turnips, the Ryelands are brought down to run after and clean up the layer, by which they get well wintered; and as the summer approaches, they return to the high lands, and work in the fold.

If any man can devise a system, which, under such circumstances, will pay more in good produce *per* acre, let him suggest it; his information will be thankfully received. But it will be urged, Why is it that these men should do more than we do? Why do we not draw from our management as much for the public supply? Because you are tied down and fettered by old prejudices, adverse to your interest; and because they, profiting by a more extended education, reason on a greater scale, and act on principles more consistent with nature and

good sense. It is by the neglect of, or by an unremitting attention to, this great secret in rural œconomy; and by the adoption of animals for husbandry labor, which do not consume our food, but on the contrary, add most considerably to it, that the national supply will be either scanty or abundant.

The question having of late been repeatedly asked, what proportion of the Merino blood it would be advisable to bring into the South down breed with advantage? My answer has been—One quarter only, provided the outward resemblance and character of the South-down is intended to be preserved; the Ryeland, being a white faced sheep, assimilates with the Merino more readily, and will bear one half, or even more.

With the strictest regard to truth, it may be said, that the unwearied attention of the Bath and West of England society, and the abilities of many of its leading members, (one of whom is in himself an host, I mean Dr. Parry) could alone have dispelled those doubts, which hung over the minds of numberless landed proprietors and manufacturers, deeply interested in the event, but despairing of ultimate success.

Its centrical situation as to the superfine manufactures before alluded to, a consequent connexion between the landed and commercial interests, naturally pointed it out as the centre of such untertakings, and induced me to solicit its aid. Our much lamented President, the late Duke of Bedford, was decidedly of the same opinion, and acted up to it accordingly. His loss, great as it is to the farming part of our community, would have been irreparable, were it not that his successor is bent on promoting objects so notoriously beneficial; an intimate knowledge of him enables me to say, that as far as I am competent to judge, he has ability and knowledge to perfect them.

From the foregoing observations, it will appear, that, in its common application to British husbandry, the Spanish breed of sheep has the power, perhaps exclusively, to maintain its quality of wool; for, strong keep will length-

en, but will not open or deteriorate the pile; that it has, without question, ameliorated the quality, and, what is of more importance, has added considerably to the quantity of our native short wool fleeces, whilst, at the same time, the proof or aptitude to fatten has increased rather than diminished. Supposing, then, that no great improvement in the shape should be obtained, it becomes to any man simply a question between his eye and his pocket; if he must have beauty, and that, too, of an unwieldy description, let him have it; but if he prefers profit, which is supposed to be the more substantial acquisition of the two, he knows where it may be found. A trite but wise adage says, "Handsome is, that handsome does."

He was a bold man, who first ventured to introduce among us an Alderney cow; and he must have had an eye stedfastly fixed on this adage for consolation; yet the event has justified his hardiness. Just so with these Merino sheep; but, as other breeds have been improved, so by careful selection may these; for the foundation, good wool, and good and early proof, are not deficient.

This race of sheep has retained all its quality of pile in Saxony, as well as in Sweden and Denmark, where it has been spreading for 50 years past; in proof of which, 200 bags of Merino wool, scoured and sorted, were imported some years ago into this country, by one person, and the whole of it sold at the primest price of Spanish wool: when manufactured into cloth, it worked up as well, as it looked in sample. The exertions of M. Lasteyrie, in his late work (Histoire de l'introduction des Moutons a laine fine d' Espagne, dans les divers Etats de l' Europe, et au Cap de Bonne Esperance) must not pass unnoticed; his knowledge has obviously been obtained in the sheep-fold, and the fluency and correctness with which he details the various diseases of sheep, and their remedies, declare him to possess a shepherd's knowledge of a flock.

In his commencement of the subject, he expresses himself thus: "The different governments of Europe had

long acknowledged the advantages that would be derived to agriculture and commerce, from the introduction of fine wools into their respective states; but their views meeting opposition in the ignorance and prejudice of the times, a considerable number of years elapsed, before they set about realizing an idea, which, at first, seemed chimerical; at length there appeared men equally commendable for their patriotism and for their knowledge, who have laboured with zeal and perseverance, to enlighten their fellow-citizens, by producing facts to prove, that nature, far from opposing itself to the preservation of fine-wool sheep in certain climates, seemed, on the contrary, to lend itself complacently to the exertions of industry. I believe I have demonstrated in my treatise on Sheep, that the fine wools of Spain depend neither on the voyage, nor on the soil, nor the climate, nor the pasture; but that it depends on other causes, and that it is possible to have in France and elsewhere, wool of the same quality as that of Spain. My travels in the North of Europe have offered facts and observations, which have afresh demonstrated this truth. I have found in the far greater number of the flocks I have examined, wool, which, judging from the eye, or the touch, equals in beauty and fineness that of Segovia and Leon; so much so that, in my opinion, no doubt can remain, that we can obtain superfine fleeces in every part of Europe, where pastures are to be found, and where we can depend on winter food, on which sheep can be supported. These wools make cloths as fine, as silky, and supple, as those manufactured of Spanish wool, as attempts made in France, and other countries prove. But were it true, that the food, climate, and other local circumstances, had a certain influence on the intrinsic qualities of wool, such as the elasticity, the strength, the softness, &c. &c. it would not be the less proved, that, at all events, cloths, fine and beautiful enough to satisfy persons the most difficult on this point, can be obtained; and that a nation can easily do without the fine wools of Spain, and feed its finest manufactures with those drawn from its own pro-

per soil. Nevertheless, as these truths are still held in doubt by some persons, and lest these doubts should have a considerable influence on our agriculture and our commerce, I thought it my duty to publish these facts, which must give a new degree of force and certainty. I here present to view the actual state of Merino flocks, naturalized in Europe."

He says, that a Merino flock came into Sweden in 1723; that from the year 1740 to the year 1780, a bounty of 75 *per Cent.* was allowed to those who sold fine wool; in 1780, these bounties were reduced to 15, and in 1786, to 12 *per Cent.*; and in 1792, being no longer deemed necessary to encourage this breed, they ceased. In 1764, Sweden possessed 65,369 Merino Sheep, of the pure blood, and 23,384 of the mixed blood; since that period they have constantly increased in number, in spite of the difficulty occasioned by the length of winter and severity of the climate. That the Merino sheep preserve, in Sweden, their pristine form; that the fleeces have lost nothing of their equality of length, their elasticity and fine quality of pile; that their weight continues as great as in Spain; that he has seen Merino rams whose fleeces weighed thirteen pounds each; and that, when seasoned to the climate, and properly fed, he has seen them larger and finer sheep than in Spain. Upper Saxony, he says, is the country next to Sweden, where the introduction of the Merino breed is of the longest date; and it is in Saxony where this naturalization has met with the most marked success, and produced effects the most beneficial; the native breeds have, by a mixture of Merino blood, profited in an equal degree. The first importation was in 1765; the next in 1778. Mr. Lasteyrie says, he has seen many different flocks, and has found the pure Merino, as well as some mixed breeds, producing wool of the first quality; indeed, the sheep walks of Saxony are, at this moment, more productive than any other species of husbandry; and that the wool sells at three times the price of the wools of the country. Saxony rears about

1,600,000 sheep; of which, 90,000 are Merinos, and the mixed breed.

They were introduced into Prussia by Frederick the Second, in the year 1786. Some of these, distributed over the country, from mismanagement and gross neglect, have degenerated and died; others he has seen, which preserve their pristine qualities.

In Denmark, and in various parts of Germany, Mr. Lasteyrie has seen this race of sheep always prospering, if well treated; and in this and every other country, degenerating from want of food and neglect; always, however, doing as well as the native breeds in the same keep, and in some cases better; that the more regular and ample the supply of food is, whether of grass or green vegetables, the heavier and finer will be the fleece, the larger in size, and more perfect in shape, will the sheep be. He strongly recommends housing; but adds, that foul, close sheep-cots are injurious; that a free circulation of air is always found beneficial; and that this breed of sheep suffers more from heat than from cold—(this doctrine has been repeatedly confirmed by our practice at home); that they will get fat as quick as any indigenous breed, in any country, and have done so wherever a comparison has been made.

The details of the treatment of the Merino flock at Rambouillet, a national farm near Paris, merit notice; they appear to result from much patient observation. An experiment was there made, which denotes the peculiar character of this breed, and its tendency to carry wool. A ewe, eighteen months old, was left unshorn; the next season, her fleece, when shorn, weighed fourteen pounds ten ounces; and its pile, which was double the usual length, lost nothing as to weight, because few ewes would have given more wool, if clipped at the usual periods. Another ewe was shorn at thirty months old, and gave a still greater quantity of wool, although she, at that season, suckled a lamb; her fleece weighed twenty-one pounds, and the pile was eight inches long. In the ninth

year (1800); eight ewes, whose fleeces were of two years growth, gave from sixteen to twenty pounds each. It appeared from these different experiments, that Merino wool, of two years growth, will double its length, and will preserve all its fine quality; it was not observed that the sheep subjected to this experiment, suffered particularly from heat, or that their health was in any degree injured.

It is possible that this property of the Merino fleece, to grow beyond the period usual in our breed of sheep, may be productive of some new manufacture; where great length and fine quality of pile is requisite; but the hazard of the blow-fly, and the chance of losing, in hedges and brakes, any part of a fleece, after it is once fit for a manufacture, will not allow of this practice becoming general, admitting even that the sheep suffer nothing in their proof during the summer months from the weight of the fleece, which, in a large scale of practice, is improbable, and that the wool should be found to pay as well for growing to this length, as it would when shorn in common course; but we have taken the liberty of noticing a circumstance so novel to us, because our English breeds are all supposed to cast their fleeces at a certain season of the year, if not shorn, with exception to lambs, which hold their fleeces—(this is quoted by many as an argument against shearing lambs); because the fact has also been doubted by some of the best informed and liberal amongst us, not supposing the reporters of Rambouillet meant to deceive, but that some mistake must have been made. A sample of this wool is now in England; I have carefully examined it, and can bear testimony to the fact.

The Duke of Bedford, who left Paris at the moment when hostilities were about to commence, consequently the latest, as well as one of the most correct judges of the matter, declares that he carefully examined the Merino Sheep at Rambouillet, and that he found them of a size he was unprepared to expect, and that still the woo preserved its original purity. Samples of the wool taken

when the sheep first arrived, and at various periods since that time, were examined by him, with all possible accuracy, and evidently declared a progressive improvement. He thought the wether sheep, of the pure blood, might be fed to twenty-five pounds *per* quarter; a size beyond which, it will not be advisable to push them, unless vanity is to be gratified at the expence of profit.

[*To be continued.*]

WOOLEN MANUFACTURES.

The legislature of the state of N. York, at their last session, passed a new law to encourage the manufacture of woolen cloth by giving premiums, and repealed the old law on this subject. The following are the premiums provided for in the existing law, viz: For the best specimen or specimens of woollen cloth of uniform texture and quality as nearly as may be, not less than 200 yards, wholly manufactured in this state and of wool produced in this state, of a breadth not less than three quarters of a yard, a premium of 200 dollars.

For the 2d best specimen of like cloth, 150 yads, 50 dollars.

For the third best specimen, 100 yards, 30 dollars.

These premiums to be adjudged by the society for the promotion of useful arts, and the specimens to be exhibited to the society at Albany, before the third Tuesday of February.

FAMILY MANUFACTURES.

"That the person who shall, in his family or under his immediate direction, at his expence, manufacture, or cause to be manufactured, within any of the counties of this state, of wool shorn from sheep owned in said county, the best specimen of woolen cloth of uniform texture and quality, of not less than thirty yards, the breadth not less than three fourths of a yard, shall be entitled to a premium of 40 dollars."

For the 2d best specimen of like cloth in each county of 25 yards, 35 dollars.

For the third best specimen, of 20 yards, 40 dollars.

The premiums to be adjudged by the judges of the court of common pleas in the different counties, on the 3d Tuesday in January; and proof is to be exhibited that the specimens were carded, spun and wove in the county. Pieces of at least a quarter of a yard from the prize specimens of each county, are to be forwarded to the society for the promotion of useful arts. Persons may be candidates for the state premiums for family manufactures, without being so for the county premiums; provided they exhibit to the society whole pieces of cloth. The society will determine on the first, second, and third best specimens thus exhibited, and adjudge to the owners the following premiums, each in a piece of plate with suitable inscriptions, viz.

For the best specimen, ninety dollars.

For the second best specimen, eighty dollars.

And for the third best specimen, seventy dollars.

No person to be entitled in any one year to more than one county premium. The act is limited to one year.

A Description *of* Smith *&* Drinker's *Manufactory of* Cotton Twist, *on Four Mile Run, in the District of Columbia, begun the* 1st *of April,* 1810.

The building is of brick 30 by 33 feet. On the ground floor are worked one cotton breaker and two finishers single geared with eight flat cards covering one fourth of their principal cylinders. They are turned by water, have a leathern band passing over a large drum or barrel extending lengthwise of the house twelve feet; this drum gives motion to the whole machinery of the factory. On the same floor are four drawing heads, and four roving heads, with cans, barting frames, &c. capable of carding, drawing, and roving 150 to 180 pounds of cotton per week. This department requires one man and three boys to attend it.

On the second floor are two frames of spindles; one has 96, the other 12. They may be turned, with safety

to the work, three thousand revolutions per minute, and will spin two and a third hanks per day of thread, No. 10 to 30—A reel to wind off 20 spoils at once with roving winders: and a machine for carding wool, which will card and roll 100 weight of wool per day.

This department requires one woman and three small girls to attend it. The wool-carder requires the constant attention of one man, when it is carding.

The spindles used in this factory differ in several important points from those used in England, or in any other factory in America. They are capable of doing more and better work, and require less attention than the Arkwright spindle generally used. They are well adapted, and make excellent thread when run by hand, 6 or 8 spindles in a frame.

In addition to the above machinery, the proprietors are now constructing (as fast as their funds will permit) two frames of 96 spindles each, and a mule with 144 spindles, a breaker and two finishers, with a set of drawing and roving heads. They also contemplate a small establishment for colouring and bleaching of cotton twist. GEORGE DRINKER.

Centre Mills, August 28, 1810.

USEFUL IMPROVEMENT.

Benjamin Parry, of Bucks County, Pennsylvania, has invented a new Corn Kiln, or machine for drying corn or other grain—The machinery over the oven is composed of three sheet iron sieves, perforated, which receive a vibratory motion gradually ceasing by small jars; in which sieves the corn moves from the first to the second, &c. until it is delivered at the same end of the kiln it was received. By this method there may be from one to five hundred bushels (according to the wishes of the constructor) of corn dried in twenty four hours, with but little labor and much less fuel than in the ordinary way—The inventor has obtained a patent, which secures to him the exclusive right of using the above machine and of vending it to others. *Freeman's Journal.*

To Mr. S. Hodgst we are indebted for an ANTICIPATION of the following valuable Table, compiled for the next Edition of his Statistical Manual.

Domestic Exports U. S. comparing the Agricultural and other productions of 1791 with the last Seven years, from official documents, valued in dollars U. S.

PRODUCE OF THE SEA.

Year.	Dried Salt Fish.	Pickled Fish.	Whale oil and bone.	Spermaceti Candles.	Total of the sea.
1791	1,200,000	200,000	196,480	60,000	$ 1,656,480
1803	1,920,000	560,000	280,000	175,000	2,635,000
1804	2,613,256	639,419	311,028	69,720	3,433,423
1805	2,058,000	348,000	314,000	163,000	2,884,000
1806	2,150,000	366,000	418,000	182,000	3,116,000
1807	1,896,000	302,000	476,000	130,000	2,804,000
1808	623,000	98,000	81,000	23,000	832,000
1809	1,123,000	282,000	169,000	136,000	1,710,000

PRODUCE OF THE FOREST.

Year.	Ginseng and Peltry.	Naval Stores.	Pearl & Pot Ashes.	Lumber, Masts, &c.	Total of the Forest.
1791	290,208	230,000	350,000	1,210,000	2,080,208
1803	630,000	460,000	735,000	2,800,000	4,850,000
1804	1,047,305	327,931	642,000	2,548,000	4,654,466
1805	1,115,000	702,000	776,000	2,602,000	5,261,000
1806	980,000	409,000	935,000	2,537,000	4,861,000
1807	995,000	335,000	1,448,000	2,637,000	5,476,000
1808	161,000	102,000	408,000	723,000	1,359,000
1809	468,000	737,000	1,506,000	1,843,000	4,583,000

PRODUCE OF AGRICULTURE.

Year.	Animal Food, &c.	Vegetable Food.	Tobacco.	Cotton.	Total of Agriculture.
1791	1,200,000	4,640,000	4,000,000	30,000	9,870,000
1803	4,135,000	14,080,000	6,230,000	7,920,000	32,995,000
1804	4,284,568	12,080 684	6,000,000	7,404,117	33,385,262
1805	3,385,000	11,752,000	6,341,000	9,445,000	31,562,000
1806	3,274,000	11,050,000	6,572,000	8,332,000	32,375,000
1807	3,086,000	14,432,000	5,476,000	14,232,100	37,832,000
1808	968,000	2,550,000	833,000	2,221,000	6,746,000
1809	1,811,000	8,751,000	3,774,000	8,515,000	23,234,000

PRODUCE OF MANUFACTURES.

Year.	Domestic Manufactures.	Of Foreign Materials.	Total Manufactures.	Total of Domestic Exports.
1791	600,000	400,000	1,093,320	14,600,000
1803	790,000	565,000	1,356,000	42,235,000
1804	1,134,864	454,916	2,189,000	41,095,089
1805	1,579,000	721,000	2,300,000	42,387,000
1806	1,889,000	818,000	2,707,000	46,504,000
1807	1,652,000	468,000	2,120,000	48,700,000
1808	309,000	35,000	344,000	9,433,000
1809	1,266,000	240,000	1,506,000	31,403,702

For the Agricultural Museum.

MERINO RIDDLE.

As it may lead to calculations and enquiries useful to those preparing to propagate Merino Sheep, a solution is asked of the following:—admitting that the 5th dip of full blood on common stock, or 31|32's of full blood, is equivalent to full blood—

How comes it, that the little tenant, with one single Ewe, may, by breeding in and in, have a full-blood Lamb in the fifth year:—and yet the great Landlord, from one hundred Ewes, will not have, by the same process, and on the most favorable calculation, more than three full-blood Lambs, within the same period of time?

SHEPHERD.

SUMMARY OF FACTS,

Relative to American Sheep, by a Farmer of Pennsylvania.—Transmitted to the English Board of Agriculture, by GENERAL WASHINGTON, *in* 1794.

COMMUNICATED BY MR. CURTIS.

The Sheep of America are not natives; there are no wild Sheep; they are of course all domesticated. No animal requires more care and attention than this; it is naturally timid, and helpless, and seems to have less of the instinct, which in brutes is a substitute for reason, than any other beast. It cannot defend itself against its numerous foes; it is a prey to dogs at home; and if it should stray into the forests, the beasts of prey would soon destroy it. Some are, comparatively with other Sheep, more hardy, but compared with other beasts, they are all delicate.

The stock of our Sheep is European.—The Swedes and Dutch had a few previous to English settlers, but the importations of any consequence were from England.—The Germans also brought Sheep, and I have known

some from Spain, and I think a pair of *Persian Sheep*, (*a*) but the great proportion is from the English stock. There are no great varieties, as the breeds have been mixed, but the American Sheep resemble most in shape, and figure, those of England; in size, they are generally smaller.

(*b*) The average weight of Sheep in Pennsylvania, when fat, does not exceed 48 lbs. nett. I have known a carcass 112 lbs. and have heard of one 180 lbs. The weight of the quarters, may be judged from that of the whole. It lays the fat most, on the hind quarters, which are therefore the heaviest. The number of ribs are generally twelve, on a side, some have twelve and a false one. The common run of good sheep, in the Philadelphia Market weigh 60 lbs. but 80 lbs the carcass is not uncommon. The price of mutton in that market, the year through, about d.4 1-2 Currency, and the price of Sheep in flocks, when poor, is about 7s. 6d. or 4s. 6d. sterling.

The Mutton (*c*) of this country differs as it does in others; that fed on short bites and hilly lands, is the best. The smaller size if well fatted, is also the sweetest and best flavoured. It is generally accounted better than the large English or German mutton; but the small mutton of Wales and other hilly countries is as good, but not superior to ours in the same kind of country. The best flavoured mutton, is not common in the market of the Capital, the largest and fattest is to be found there, but the choicest and finest meat is only to be had at a distance, in the neighbourhood of hilly or relatively barren countries. The (*d*) heaviest fleece I ever knew weighed 13 lbs. nett. (*e*) The price of wool upon an average is an English shilling per lb. three lbs. to a fleece, is an ample average allowance.

I have seen home-spun cloth, of the fabric of an English superfine. It is said that we (*f*) have wool, as fine as that of England at least; but it rather appears best calculated, for the coarser kinds of cloth. These are manufactured here to great perfection, and will outlast any imported.

(g) Few Sheep keep their prime longer than seven years. It depends much on their treatment; but at this age, they generally begin to decline.—None will bear to be full fatted, and suffered to go lean at any age; they always perish with disease, when this happens. The average weight of the tallow, is about one eighth of the Sheep, if the Sheep is well fatted.

The time of yeaning, is generally from the middle of February, to the end of May,—the most are lambed in March and April,—some are dropped at Christmas.—They are as well covered with wool, as is common with lambs of other countries.—It is rare, for a (h) ewe to lamb twice a year, although I have known it to happen. A prodigious number of Sheep, could be raised by every farmer keeping a few, say a score at most, to a common sized farm, and these could be well attended to, without injury to the common affairs of the farm.

(i) Premiums given by Government or from private subscription funds, under the direction of the Agricultural Societies, which are spreading themselves through every part of the United States, would assist in the attainment of what is most wanted, a (k) perfect breed of Domestic Animals, Horses, Cattle and Sheep, included. Emulation, would be set at work, and the laudable pride of excelling each other, would stimulate intelligent and attentive farmers to this kind of exertion.—A breed thus obtained, will exceed any importation; the animal will be assimilated to our climate, in which there are some peculiarities, not favourable to all imported breeds, or their progeny unmixed—(l) As to the food, it is of the same nature in most countries. Sheep are close biters, and great consumers of pasture. The shorter and drier the herbage in summer, the better; in winter, they require, in addition to Hay, Indian Corn, Tops and Blades, and other dry Fodder, and some succulent food, but our snows forbid the turnip fodder extensively.—I had one winter a great quantity of the root of Scarcity, and my Sheep were never more thriving. When snows lie long, the branches of the pine, have a surprising effect in pre-

venting disorders. Sheep should not be kept in close sheds, or hovels, except when the lambs are young, and the weather then cold, and wet; cold never injures grown Sheep, or young Lambs; wet long continued, kills them. A change is necessary, both of pasture and local situation. They never thrive if kept more than six years upon the same farm. Those from hilly countries, will fatten fast, upon low lands, but must be immediately sold to the butchers. Sheep, Deer and Goats, can feed with safety, on many things fatal to other animals; but both the latter have more sagacity in the selection than the former. The most common diseases are the scower, and the rot. The (*m*) runing at the nose, I take to be a companion, or consequence of the rot, which (*n*) in its first stages, appears to be a species of catarrh. Wet weather long protracted, too luxuriant herbage, wet or sour pastures, or too much water, will produce the scower, which is a forerunner of other diseases. The putrid air of confined stables, or folds, where too many are kept together, is one cause of the rot. I do not believe that when the taint is once fixed, the animal is ever perfectly cured.—Removal to salt meadows, has checked this disorder, in its first stage, tarring the troughs, in which they drink, and stinting the quantity of water are also beneficial.—The free use of pitch pine branches and buds, is also an efficacious preventive and remedy. Sulphur is beneficial in the first stages of the rot. A decoction of Hellebore, or tobacco and tar ointment, are serviceable in the first attacks of the scab, a disorder common to Sheep, in all countries, and which in its commencement, is a cutaneous disease.

There is an infinite variety in the countenances of Sheep. Examine the largest flock, and you will find no two faces alike. The changes appearing in the countenances and eyes indicate disease, or recovery; but I know not what are the symptomatic appearances peculiar to each. (*o*).

When fleeces begin to fall off in spring, owing to relaxation, from too much warmth, or weakness, giving

them Indian corn will set the fleece, by strengthening the Sheep.

(p) The fleeces are clipped but once a year. All our fleeces are taken off in May or June. Sometimes we shear the early lambs in July or the beginning of August; but it is not commonly practised.

Miscellaneous Observations. (q.) The state of our population and habits, now precludes us from going extensively into the Sheep Husbandry. If it ever should become necessary, there are immense tracts which might be devoted to it—they are now called barrens. These, when burned, throw up a vegetation of white clover, and abound with aromatic herbs and plants, favourable and nutritious to Sheep. I do not find our Sheep more subject to diseases than those of other countries. But we shall be embarrassed in our means of keeping large flocks through the winter, and in long winters their disorders will be more contagious and fatal. The pelts are now manufactured into parchment, and leather for various uses—The latter is often died and substituted for Morocco, but it is inferior to it. The parchment of this country equals that imported, and can be increased in quantity, so as nearly if not entirely to supersede the necessity of importation.

The wolves in our mountains are formidable to Sheep. But these will decrease, although they may not be extirpated, by the progress of the settlements. I have been told, that the wolf avoids the goat, either on account of its smell or appearance—It is said that keeping a few goats, especially he-goats, with the Sheep, has been on this account practised with success, in some of our frontier settlements.

Notes and Remarks in our next.

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NOTES AND REMARKS,

ON THE

Summary of Facts relative to American Sheep, by a Farmer of Pennsylvania. Transmitted to the English Board of Agriculture, by GENERAL WASHINGTON, *in* 1794.

BY MR. CURTIS.

(a) *The Persian Sheep* were imported direct from the East Indies, and a Ram and Ewe presented to General Washington, either by Colonel O'Donnel, or Mr. Barry. At the sale of the General's Stock in 1802, Mr. Custis purchased the imported ram for the sum of ten pounds, a sum in those days deemed the effect of madness or folly.—In these days *Eleven Hundred and fifty Dollars* have been given for a Ram, and the sum deemed the result of wisdom and patriotism.

The imported Persian had tupped at Mount Vernon, but a short time previous to his sale, but his get had wonderfully improved the form and greatly increased the length of staple in the Mount Vernon flocks, and altho' the mutton at that hospitable board was always much esteemed, its delicacy and flavor was greatly increased by the Persian admixture.

The Persian are a Sheep of fine constitution, and possess the admirable requisites of short legs, and round bodies, and altho' the wool is harsh in fibre, it forms an excellent foundation for long wooled stock. The Arlington long-wooled, founded on this race, have had their staple much meliorated by the introduction of finer wooled crosses, and the length at the same time retained in sufficient degree. The very superior flocks of Mr. Foote, and Mr. Meade of Frederick, bred from

the Arlington long wooled, still trace their origin to the imported Persian, altho' the latter flock received an essential benefit from the *improved* or Bakewell cross upon the long wooled.

The general race of Sheep in the Southern Country, previous to the introduction of the Persian, were remarkable for a short, knotty, and cotton like appearance of wool, hardly enough to keep the animal itself comfortable, and hardly any to spare to the farmer's use in any season. The Persian greatly increased the length of staple—gave a very superior form to this degenerate race. The flocks upon the estate of Mr. Custis in New Kent, were of the old race of the country, as just remarked, till 1806, wool 2 or 3 inches long, and sparingly scattered upon a very spare and gaunt frame; since this period the flocks have become a fine long wooled race, and much admired both for wool and appearance.

The imported Persian Ewe died a few years since at Arlington. A thorough bred Ram was sent from Arlington to the estate of George Calvert, Esq. of Riversdale, near Bladensburg, and was the only one bred from the imported stock. Mr. Calvert sheared a very fine Lamb, of the long wooled race, a year since, probably derived from his Persian. It is presumed that some of the Persian race are still existing about the estate of Col. O'Donnel, near Baltimore, and if so, they are well worth the attention of long-wool breeders.

(*b*) *The average weight of Sheep,* to the South is very similar, from 40 to 60 lbs. neat—100 is a large mutton south of the Susquehannah, altho' in a few instances, they have been found of still greater weights. Smith's Island wethers are quoted at 60 lbs. neat. These sheep being children of our soil and clime, may be considered as a fair average for the best pastures of the South.—

The price of Sheep in Virginia, may be rated at from one to two dollars per head for Lambs, from two to three for grown Sheep when poor, and from three to five for fat wethers, according to the season.—The price

of Rams, of the country breeds, previous to 1802, was from three to five dollars.—The Persian was perhaps the highest priced Ram sold from the Revolution up to 1802.

(c) *The Mutton of this Country*—The mutton of Virginia has always been deemed excellent. The best mutton has however been derived from the Sheep of *Curracoa*, imported many years since, and generally extended. The tail of these animals is esteemed a great delicacy, altho' by no means so large as that of the *Barbary* race. The Curracoa are all coarse wooled, tho' very thrifty in feeding, and fatten at an early age. General Washington received as a present, from a Mr. Athol, of Antigua, some West India Sheep, perfectly hairy and much resembling Deer, but delicious as mutton. These tropical strangers soon lost their hair, which softened into wool as a protection from the inclemency of a colder climate. From the facts of coarse wooled Sheep always producing the best mutton, at all ages and in all countries, it may fairly be supposed, that Merinos will fail in these respects; but if the Merinos are not so well suited to the interior, they are certainly amply provided with every requisite for the exterior economy of our citizens.

(d) *The heaviest Fleece.* The fleece of Bakewell, the first premium Lamb at the Arlington Sheep-Shearing in 1805, weighed 12 lbs. 5 oz. clean wool—In answer to certain queries proposed to the agent at Smith's island, and others conversant therewith, 13 lbs. is reported as the greatest fleece; but as the Smith Island sheep have generally a good deal of sand in their fleeces, Bakewell's fleece may be considered as superior.—Mr. Foote's Badger, a lamb of Mr. Peter's, and one of Mr. Calvert's, all of the Arlington long wooled, averaged 10 lbs.—5 lbs. of clean wool is nevertheless an ample and indeed a great average fleece for American flocks.

(e) *The Price of Wool.* The price varies—Wool to the South is generally sold in the dirt, from one to three shillings per pound—Thirty cents ought to be deemed

an average value for unwashed. We should hope that this slovenly practice, of selling wool and filth together, will now give place to a more desirable system. Three pounds to a fleece appears a fair average. It is certainly enough for the South.

[*f*] *We have Wool as fine.* That we have some wool, and native wool, as fine as that of England in general, no doubt exists; but this is very partially found in our wide extended territory. Inattention, and the promiscous intercourse of flocks, have greatly mixed the fine wool with the coarse; yet in most flocks some fine wooled samples are to be met with. The Smith's Island is fine—probably fine wool was first placed there, and there it still remains, in a long extended line from generation to generation again, for the Island has received no race from abroad. Most American Sheep have three distinct wools upon the same carcass—The neck and shoulder fine, the body good, and the hips and thighs coarse. English Sheep are more uniform in the quality of their wools.

[*g*] *Few Sheep keep their Prime longer than 7 Years.* Four years or the full mouth may be considered as the ripest age for Sheep. Ewes generally fail in milk after this period, and wethers do not fatten so well when their teeth begin to wear. Six years would be a safe age to prune a flock at, when ewes and wethers should both be prepared for the knife. It is essential, in raising improved Sheep, to examine the Ewes frequently, to ascertain whether they be good nurses, since many ewes, to appearance well looking, are but indifferent milkers.

[*h*] *It is rare for a Ewe to Lamb twice a year.* It is rare, but sometimes happens. I have known Ewes to yean at almost all seasons. Young Ewes which have been kept from Ram, for a length of time, will sometimes receive him, at extra seasons, and produce accordingly. It very seldom occurs, except with young Ewes.

[i] *Premiums given by Government.* Some of the State Governments have already adopted this measure.

[k] *A perfect breed of Domestic Animals.* Our breeds of Domestic Animals are sufficiently perfect for their various uses—Sheep excepted. Horses have arrived at a peculiar degree of perfection, and importations from England, have within a few years been immense.—For useful purposes, we want no more, yet it is truly melancholy, to see how few of these imported animals, have conduced to the benefit of rural employments. Few of the stock of Highflyer, or Eclipse have descended from their dignity so far as to minister to the duties of Agriculture. The patient animal who draws the Plough, is a better servant of the Republic, than the gallant courser who wins the race. That blooded Horses have their merits, is most true, but unfortunately these merits are much obscured, by being more devoted to the pursuits of pleasure, than the practice of industry.—The wealthy and careless may indulge in the delights of the Turf, but they should remember, that the enjoyment of their favorite pleasures, gives nothing to virtue and industry, but is rather an encouragement to idleness and vice.

[l] *As to the food.* The food proper for sheep, is to be found in all lands, very rich and very wet ones excepted. Rank grass purges, and wet grass rots sheep. The grass of hills is most preferable. Old lands which have put up white clover, are particularly healthful for this delicate animal, but to all pastures, whether high or low, some portion of wood should be attached. This in Summer serves as a protection from the Meridian heat, and in winter screens them from driving snows. In Spring, sheep should be driven to woods, where they browse upon the young twigs and buds, which operate as an aperient medicine after the long feeding on dry provender.

Sheep should not be kept in close sheds. Nothing injures sheep more than confinement. They seem by nature free, and are so Domestic as to need little control. The close mephitic atmosphere, generated in hot stables

is highly injurious to the tender organs of sheep, and although a shelter is useful, in wet freezing weather, its only use is to keep their beds dry, for their bodies feel harm only from lying on wet ground, and not from falling weather.

[*m*] *The most common diseases.* The diseases of England and America are very similar, and often proceed from the same causes, although the climate is naturally different. The scower generally attacks in the spring, and often proceeds from eating young clover.—When it appears at this season, it is generally cured by shearing the animal which giving a free vent to perspiration, checks and ultimately conquers the disease. When at other seasons, dry meal and salt, is perhaps the best medicine, and high short pastures the best regimen.

[*n*] *The running at the nose.* I can by no means agree with the Pennsylvania farmer, as it respects this disease. My experience has shewn me, that a running at the nose is liable to all ages, and conditions of sheep, and is generated by damp foul weather, want of salt, and crouded folds.—I have known it to occur and disappear within a few days.—I have no idea of its being a concomitant of the rot, but rather think it an influenza, liable to be generated and removed by the state of the atmosphere.

The rot.—I consider as a local disease almost entirely confined to the liver of the animal, and in no wise contagious. Parkenson in his Practical Farmer, gives a minute and satisfactory explanation of this formidable disease, from actual experiment.—It is certain that the rot always proceeds from feeding in moist places where animalculæ are generated, and thence imbibed by the sheep.—A sheep dying of rot, will always be found to have a morbid liver, and by use of glasses small flowkes or insects, will be perceived therein. The rot never originates in frozen weather, because such insects could not then exist. The rot when taken, admits of no cure other than nature may perform, nor is it contagious, from its being the effect of extra causes. All sheep which feed

in moist places, are not alike affected, some escape forth-itously, and do not imbibe the insects, others perhaps imbibe, but from a peculiar state of the stomach, discharge them without injury. Some few, have their livers healed, but generally speaking the disease is fatal. Sheep do not always waste away with this disorder; they sometimes die full fat; and the experience of Smithfield, tends to shew, that it is no injury to the mutton. A small pendulous bag appears under the jaws in the latter stages of the disorder; when this appears, the farmer may proceed to save his wool, and pelt, for death invariably follows this symptom.

[*p*] *The fleeces are clipped.* Sheep in all parts of the United States, Smith's Island excepted, are clipped once a year. This should be done as early as the season will permit, or considerable loss in wool will ensue, for the animal seeks to get rid of its winter's coat, so soon as spring weather occurs, and will rub off much wool in course of a short time. The Smith's Island Sheep are clipped in April and September, the reasons and practice will be made known to the public, in a memoir hereafter. Lambs unless early and well grown should not be sheared the first season. The practice of shearing lambs has been recommended by Dr. Logan, and other distinguished Agriculturalists, but it can only answer in favourable seasons, and when the animals are in fine keep.—A wet season I should suppose would be very fatal to shorn lambs.

[*q*] *The state of our population and habits.* If 16 years ago the state of our population, and habits was thought unfriendly to sheep farming, the state of our country is peculiarly adapted to its encouragement and practice, at this time. 'Tis amazing that the people of the United States should so long have been blinded, to a sense of their true interests. Strange, that a people who loved the name of Independence, should neglect the practice by which it is preserved. The rage for importation, seemed to have made our citizens forget, that Providence had blessed them with a country abounding with every pos-

sible resource for their wants Feeble and helpless, indeed must have been the colonists, before the revolution, who imported handles from England, to fit to their scythes and hoes.—Was America so scarce of wood as to be unable to furnish this humble requisite, or rather was American skill, and industry, still more wanting?

The nation has at length awakened from its long and dangerous slumber. It is becoming praise-worthy for a man to clothe himself from the resources of his farm, and the industry of his family.—Independence the price of Patriots' labours, and Martyrs' blood, will bless our land, while industry with her joyous train, happiness, and content, shall hail the virtuous regeneration of our country. The American citizen will no longer seek from abroad those comforts which are now to be found at home; and the American Republic shall present to the world the commanding spectacle of a nation—great within itself—a people prosperous and happy in the enjoyments derived from Domestic industry, and a Republic flourishing in the blessings of rational liberty. May we sleep no more.

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Extract from an Essay on the Culture and Manufacture of Flax; read before the Culpeper Society, for the promotion of Agriculture and Domestic Manufacture—by JOHN STRODE, Esq.

[Continued from Page 128.]

Flax appears to be better calculated, for the use of a private family, than either Hemp or Cotton, and that for two very essential reasons.

First. Because it comes sooner to maturity, and is easier cleaned, and rendered fit for the wheel. For by water-rotting of Flax immediately as ripe and pulled, I have had it spun and wove into cloth in the month of July, that is, within four months after the seed was put in the ground. This is no small consideration to the needy or poor. For them, indeed it is, a great and speedy resource.

Secondly. A longer thread can be spun thereof, from the same quantity of labour and time; that is, 20 per Cent more than of Hemp, and 100 per Cent more than of Cotton. Of this I am convinced from fair and repeated experiments. The task of a spinner of Flax is 12 cuts or hanks, each of these cuts contain 120 threads round a reel of 2 1-2 yards in circumference, making in the whole 3,600 yards, which is a moderate day's work; some perform much more, but of Cotton it will require two persons well skilled, one to card, and the other to spin that length of thread in a day, although they choose that size most favourable to dispatch.

With submission, Gentlemen, have I so far endeavoured to state simply and concisely, what my small experience has taught me. I regret that it is not more to the purpose, and that my knowledge does not enable me to trace the subject through all the national, as well as private benefits, which may be derived from it; a fair statement of which, I yet hope to see, from under the hand of some person whose information may amply qualify him for the work, and that it may have a happy influence on the active part of our Fellow-Citizens.

The foregoing experiments were chiefly made during the late War. I hope soon to resume the business of manufacturing Linen, and be more accurate in my calculations; and where I make further discoveries, shall with great pleasure avail myself of the honor of submitting them to your inspection.

For your kind and polite attention, I beg leave to thank you, Gentlemen, and to assure you of that amity, and esteem with which I regard each individual of this Society. And that

I am, Gentlemen,

Your devoted humble servant.

JOHN STRODE.

Extract from Lord Somerville's Essay on Sheep.

Continued from page 136.

M. Pictet, editor of the Bibliotheque Britannique, in frequent details of the success which attends these sheep, both on the national farms near Paris, and on his own, near Geneva, where his flock consists of 400 Merino sheep, says, in his 210th Number—"In our Journal, we have given the fifth annual report of our flock of the pure blood, originally drafted from that of Rambouillet. It is now clearly proved, by the experience of a great many husbandmen, that the Merino breed succeeds remarkably well, and without degenerating; and that this valuable acquisition, which France owes, in a great measure, to the managers of Rambouillet, is fully established. The Merinos must keep their ground, from the very nature of things; for husbandmen will employ their capitals in the way they find most advantageous.

"It is now almost unnecessary to publish facts which, with a little variation, are merely repetitions of what has before taken place; but, as the prejudices of husbandmen are very difficult to remove, in endeavouring to convince the incredulous it is necessary to lay before them all the proofs we possess; and there is always something new occurring.

"One hundred and fourteen store ewes (*brebis portieres*) of the pure blood, have reared 111 lambs (56 rams, and 55 ewes). In the commencement of the lambing season (in the first fortnight of December), we had ten miscarriages. I was from home at the time, and the only reason my shepherd could assign for this accident (a rare one in well managed flocks) was, that the ewes had got a a custom of leaping over a ditch in one of the inclosures. However this may be, the deficiency was almost made up, by ten of the ewes having twins, only one of which died.

"The quantity of wool has not been so considerable this year as last, probably owing to the coldness of the weather, or some particular state of the air, and of the

pastures, as the same thing has been observed in other well managed flocks, and as my own has always been kept in the best possible state. The mean weight of the fleeces of the store ewes, was 7 lb. 1 oz. (pois de mare)."

In a private letter, he says—"I have much admired the samples of wool you have caused to be directed to me; I like to see your perseverance gets the better of prejudices among your neighbours. The Spanish breed of Sheep is a true mine, which the English have refused to explore till now. I don't know whether I am mistaken, but I suspect in you a higher opinion of that breed than you were pleased to own. It seems that, in order to reconcile your prejudiced countrymen to the admission of these foreign sheep, you disguised them under the Ryeland and South Down cloak; and knowingt hat meat and fat are, in England, the necessary passports of good fleeces, you particularly insisted upon the carcass being not injured by the introduction of the Spanish blood. Is it your opinion that there will be more profit for you in crossing the Spanish rams with the Ryeland and South Down ewes, than in breeding the Spanish in and in?—Have you any experiment which makes you suppose that a degeneration would take place by persevering exclusively in the same blood? Now, if there was no degeneration, (as I am led to suppose by my experience, and that of many others in France,) would not there be infinitely more profit in keeping the pure Spanish breed, than by crossing? The reputation of that excellent breed cannot but increase and extend annually in Great Britain. If the monopoly created by your wool laws, in favor of the manufacturer, was once abolished, the Spanish sheep would, no doubt, grow more and more popular. The advantages I experience, by the keeping of that breed, would certainly be still greater with you, since you have already hired out Spanish Rams at one hundred guineas *per ann.* whereas, I could not sell them higher than twenty-five. You will see, however, in the Number of September, of the Bibliotheque Britannique, that

the produce of my flock is immense, considering the capital. I should learn with great pleasure, that the number of these sheep is increasing in England; I shall say, in the terms of Washington, 'the multiplication of useful animals is a common blessing to mankind' National jealousy, on that point, is highly absurd. Industry has an immense field; and, if rival nations, instead of crossing each other in agricultural and commercial views, endeavored to take the lead in useful improvements, and emulate each other in all good things, they would be reciprocally subservient to the prosperity of their neighbors, without hurting their own. There would be more happiness for all individuals, and more people to enjoy it. So much for a dream! I come to the samples of your flock.

"I have, in my collection, samples of all English wools; your Ryeland is comparable to most of the Spanish wool of commerce; but the improvement is evident in the cross; the half Ryeland half Spanish, has all the qualities of fine Spanish wool. There is one quality, which is peculiar to the prime Leonese, viz. an extreme softness, joined with strength and elasticity. All your samples seem to partake, in a high degree, of that quality; and it is peculiarly remarkable in the cross of Ryeland.§ Now I suspect it may be partly owing to the rubbing of ochre, after the Spanish fashion; I was led to think so by observing a reddish tinge §§ in your samples, which I suppose to have been washed on the back, and by remembering that you had countenanced that method.—Be so good as to tell me whether it was so or not? I take the liberty of sending here inclosed, a sample in the yolk, of one of my best rams. I have not yet met with

§ It was to this wool that, within ten days after the receiptof this letter, the premiums were adjudged, by the Committee of the Bath and West of England Society.

§§ The common colour of the soil. Nothing has been rubbed in. A trial was made, three years ago, on some Ryeland sheep, in order to prove whether ochre tended, in any degree, to give a softness to the wool; but it appeared to have a contrary effect, if any. No trace of such a practice could be discovered among the shepherds in Spain, as has been stated; yet in some parts it may prevail. Some fleeces, brought from Spain in 1800, were analised by Dr. Garnett, and no ochre could be discovered. M. Lasteyrie agrees in the disuse of ochre, and considers it as anapplication to prevent he skins from blistering, in the sun, immediately after shearing; in no other way useful.

a finer fleece among many hundred Spanish beasts § that I have examined; as well those lately imported from Spain, as the flocks that have been naturalized these many years. That ram belongs to the seventh or eighth generation, born in France, out of the original flock arrived from Spain, alway breeding in and in, with a remarkable increase of weight in the animals and in their fleece. These facts deserve attention. You may see in the last report of Tessier and Hazard, concerning the Sheep of Rambouillet, the results of the comparison between the newly arrived Spanish rams and ewes, and the old stock issued from individuals drawn from Spain eighteen years ago; I have seen the two flocks, and would have prejudged the fact as it is stated. In my flock, the mean weight of the fleeces of the ewes of the Rambouillet breed, has been seven pounds twelve ounces (pois de mare) in the yolk. Now, the mean weight of the fleeces of the Spanish ewes arrived last year at three of my neighbours' premises, has been five pounds. As to the comparative fineness, no better criterion could possibly be obtained, than the price fixed by the merchants and manufacturers in the public sale at Rambouillet. The manufacturers do not act at random, when they give a price full as high for that wool as for the prime Leonese, coming from Spain; they have known its value, by repeated experiments, these many years." [To be continued.]

§ A French idiom expressive of Sheep.

Internal Prospects.

While our fellow citizens on the sea board, have been harrassed and embarrassed, by the increasing impediments to a free and lucrative commerce; the people of the western country have great cause of gratitude to Heaven, for the pleasing and happy prospects which are daily opening to their view. The annals of the world do not afford an instance of a country so swiftly advan-

cing to wealth and importance, as the western part of America. The time is easily recollected by thousands around us, when the sound of the axe was unheard in our forests, and savages and beasts of prey inhabited every part of the states of Kentucky, Tennessee, Ohio, &c. The contrast is as sublime as it is astonishing. The arts and sciences have already attained to a degree of perfection, which in many countries would have required the experience of centuries; and in no part of the continent has agriculture flourished to a greater extent. The world might in vain be searched for a country, where all the necessaries, and many of the luxuries of life, could be so easily obtained, as in this favoured clime. Manufactories, also, have recently received considerable attention—and we sincerely trust that the day is not very distant, when our farmers shall no longer be under the necessity of pedling the surplus products of their farms to provide decent and comfortable apparel for their families. As a corroboration of the reasonableness of this hope, it may be well to state that in procuring their late supplies of goods, our merchants begin to think it proper to purchase smaller quantities of foreign cloths than they have been in the habit of procuring, and to make much greater purchases of Domestic Manufactures.

At this day the western country exhibits a scene of prosperity, unrivalled by the examples of former years. The season has been unusually propitious, and crops were never known to be so abundant as at present. Corn will be a drug—it is said that it can be purchased in some places for ten or twelve cents per bushel. Wheat is in great abundance, although it has sustained some small injury from a species of the Hessian fly. The crops of rye exceed those of former years. The quantity of fruit (with the single exception of peaches) has never been equalled in this country—and every other production of the earth bears at least an equal proportion to the above.

[*Nat. Intelligencer.*]

ON CIDER.

Directions for making sweet, clear Cider, that shall retain its fine flavor, and keep good for a long time in casks, like wine. *Maryland Republican.*

There are persons in this country, who have for years been in the habit of making a particular fine rich and sweet Cider, which they sell from six to ten dollars per barrel: the method of doing it they have endeavored to keep a profound secret.

The writer of this being acquainted with the art, is desirous that all Cider makers may profit by it; and takes this method to make it generally known.

It is of importance in making Cider that the mill, the press, and all the materials be sweet and clean, and the straw clean from must. To make good Cider, fruit should be ripe (but not rotton) and when the apples are ground, if the juice is left in the pumice 24 hours, the Cider will be richer, softer, and higher coloured; if fruit is all of the same kind, it is generally thought that the Cider will be better; as the fermentation will certainly be more regular, which is of importance. The gathering and grinding of the apples, and pressing out the juice, is a mere manual labor, performed with very little skill in the operation:—but here the great art of making good Cider commences; for as soon as the juice is pressed out, nature begins to work a wonderful change in it.—The juice of fruit, if left to itself, will undergo three distinct fermentations, all of which change the quality of this fluid. The first is the vinous; the second the acid, which makes it hard and prepares it for vinegar; by the third it becomes putrid The first fermentation is the only one the juice of apples should undergo to make good Cider. It is this operation that separates the filth from the juice, and leaves it a clear, sweet, vinous liquor. To preserve it in this state is the GREAT SECRET; this is done by fumigating it with sulphur, which checks any further fermentation. and preserves it in its fine vinous state. It is to be wished that all cider makers

would make a trial of this method; it is attended with no expence and but little trouble, and will have the desired effect.

I would recommend that the juice, as it comes from the press, be placed in open headed casks or vats; in this situation, it is most likely to undergo a proper fermentation, and the person attending may with great correctness ascertain when this first fermentation ceases; this is of great importance and must be particularly attended to. The fermentation is attended with a hissing noise, bubbles rising to the surface, and there forming a soft spungy crust over the liquor. When this crust begins to crack, and a white froth appears in the cracks level with the surface of the head, the fermentation is about stopping. At this time the liquor is in the fine genuine clear state, and must be drawn off immediately into clean casks; and this is the time to fumigate it with sulphur. To do this take a strip of canvas or rag, about two inches broad and twelve inches long, dip this into melted sulphur, and when a few pails of worked Cider are put into the cask, set this macth on fire and hold it in the cask, till it is consumed, then bung the cask and shake it that the liquor may incorporate with and retain the fumes; after this fill the cask and bung it up This Cider should be racked off again the latter part of February, or first of March; and if not as clear as you wish it, put in isinglass to fine it, and stir it well; then put the cask in a cool place where it will not be disturbed, for the fining to settle. Cider prepared in this manner will keep sweet for years.

It is certainly of great importance to the people of America to cultivate the fruit that is natural to the soil of their country, and to make the most of the fruit which the soil produces; especially, when its produce is an article of value, and of great consumption in this country.

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THE

AGRICULTURAL MUSEUM

OMNIS FERET OMNIA TELLUS. VIRG.

Vol. I.] *Georgetown, Ca. Nov.* 23, 1810. [No. 11.

Extract from Lord Somerville's Essay on Sheep.

Continued from page 157

M. Pictet is sometimes disposed to smile at our bigoted adherence to the outward form of our sheep, and to those properties which render them capable of becoming good mutton: but M. Lasteyrie does not quite give into the ideas of the Continent in this particular.

"The practice of certain good husbandmen in England, would be attended with advantage, in my opinion, either where the fleece of lambs is intended to be preserved two years, or for sheep which are annually shorn. A little is clipped from the surface of the fleece of the animal; say one or two lines in length. The loss of wool, in a middling sheep, occasioned by this operation, is not more than half a pound; and the growth being thereby accelerated, we may expect to have a heavier fleece at shearing time. We know by experience, that in order to make our own hair grow vigorously it requires, occasional cutting.

"It was at first imagined that the Merino breed was not capable of producing, in France, wool of as fine a quality as they do in Spain, on account of the climate being colder; it has also been said, that the superior quality of the wool is owing to the journeys these animals are made to take; and, consequently, that as we cannot manage them in the same way, we shall never be able to have it of equal fineness.

"All these reasonings having been belied by experience; some have attempted to depreciate the Merinos, by maintaining that they are incapable of taking on

much flesh, and that their mutton is of a very bad quality; in a partial view, this objection might have the appearance of some degree of plausability; it is however, completely done away with, by facts. It is not to be denied, that the mutton we eat in Spain is generally lean, tough, and ill tasted; but I have observed in my Treatise on Spanish Sheep, that the bad quality of the mutton in that country, is owing to their sheep not being slaughtered until they are past breeding, or until they begin to drop off, from old age. Those who feed for the butchers, pasture their sheep upon commons near towns, already so eat down, that the sheep can with difficulty keep themselves alive. The Spaniards have very few wethers (*moutons chatres*) in their travelling flocks, at the utmost, two out of seven; and, besides, their rams are never castrated until they become old.

Such management must produce bad mutton in any breed of sheep. Besides, the coarse wooled sheep in Spain are not better mutton than the Merinos; and I myself have eat, in this country, Merino mutton as delicious as our own. What I have advanced is confirmed by facts, ascertained by Citizens Tessier and Hazard, which we shall give as stated in their report to the Institute, in the year eight.

"The experiments we had formerly made in feeding Spanish Sheep, have not been fully detailed. It has been undeniably proved, that all those animals were fattened, and the flesh was at least as delicate as that of any other breed of sheep.

Having a prejudice to overcome, which retarded the propagation of fine wooled sheep, it became necessary to produce positive facts, and authentic experiments made by order of government. For this purpose on 18 Ventose, we took three sheep of the same age, but of different weights, making a total of 243 lb.: there was a difference of 13 lb between the weight of the heaviest and lightest. We began by feeding them on lucerne and bran; afterwards we gave them barley and

oats instead of the bran. Once a fortnight, we weighed both the animals and the food they were to have, during that period; and we ascertained

1. That, on 14th Prairial, the day on which we killed one of them, the total weight of the three amounted to 326 lb. shewing an increase in their weight of 83 lb.

2. That the difference between the heaviest and the lightest was 8 1-2 lb. that is to say 4 lb. 9 oz. less than when they were put up to fatten.

3. That the sheep of greatest weight at the end, was that which was neither heaviest nor lightest at the beginning.

4. That the lightest in the beginning remained so to the end.

5. That the greatest increase in each took place during the first twelve days.

6. That during hot weather, their increase was retarded in two only; after which, the weather becoming cooler, the increase was more remarkable.

7. That at two different times, one had gained weight, while the other two had lost: and it was not the same each time.

8. That after 15th Prairial, the remaining two had gradually lost weight, though unequally.

Each of the sheep consumed in 86 days, 281 lb. of food, which is at the rate of 3lb. 4 oz. a day.

It was not when they consumed most food that their increase in weight was greatest, for they consumed most from the 15th to the 45th day.

The sheep killed on 14th Prairial, being the lightest of the three, weighed 99 lb as follows:

	lb.	
Meat and bone	51	
Fleece	7	1-4
Fat	5	1-2
Liver and lungs	4	
Head, feet, skin, and entrails	28	1-2
Blood,	3	1-2
	99	3-4

We must observe, that several of the Spanish sheep we had previously killed, had more fat than what is here stated, and we have no doubt that the other two would have given more, had we put them to the proof. Be this as it may, the meat was declared most excellent. This experiment in addition to others, proves, beyond a doubt, that Spanish sheep are capable of being fattened, and that false prejudices against the quality of their mutton, have been industriously propagated."

Having, in the foregoing quotations, given some idea of the interest this breed of sheep has excited on the Continent, it is now time to return to our own country. Some of the observations in the preceding part of this Essay having been addressed to the Bath Society, the chairman was pleased to express himself as follows:

"My Lord,

"As Chairman of this Anniversary Meeting, I am directed to convey to your Lordship the most grateful thanks of the Society for your valuable Essay on Sheep and Wool, and for your exhibitions of stock and utensils of husbandry; all of which were received with sentiments of the highest approbation. I have the honor to be, &c. &c. "John Billingsley."

Dec. 15, 1802.

Report of the Committee. (Copy)

"Your Committe appointed to take Lord Somerville's Memoir into consideration, have perused the same with much satisfaction. It contains a great deal of interesting information respecting the Spanish breed of sheep, and the different crosses of them; and his Lordship appears now to be demonstrating from his own experince, what he long ago promised to the Society, and to the public."

(Signed)

John White Parsons,
George Toilet,
Richard Astley,
David Sweet,
John R. Lucas,
S. Payne,
John R. Bracher,
Gab. Golney,
W. C. Sloper"

Among the stock exhibited, was a Merino ram, reduced almost to a skeleton, by a tedious voyage from Spain, in boisterous weather, which had since served more than one hundred ewes, and was taken from the flock the day he was sent from Bath. We believe this circumstance could hardly be known, and that it was probably the first time a ram was ever exhibited for public inspection at that time of the year, after serving any number, much less such a flock as one hundred ewes, running with them all at the same time; more particularly when we include the sea voyage, which constantly produces fever, until sheep are seasoned to it, and always renders their importation a matter of exceeding difficulty; yet, under all these disadvantages, there was a natural tendency in him to lay on flesh and fat, which could not be controuled, together with a breadth of chest, a fulness in the twist, or leg of mutton, and a breadth on the back, exemplifying the symmetry to which these sheep by attention to the frame may be brought; he cleft two inches thick of fat on the rump.

A tame bell-wether, or manso, was shewn at the same time, and killed; he was kept for the purpose of leading the flock (for no dogs are used in Spain), and always followed the shepherd, feeding from his pocket; so that when he came to this country, at three years old, this sheep might have been warranted never to have tasted grass, yet with hardly a tooth in his head, he brought himself to be good mutton, on grass alone, and was as fat as need be served at table, or "eat with bread," as the technical term is. The half-bred Ryeland, and South Down two-tooth wethers, died as well, carrying as much spine fat as was necessary; and besides what was on the kidneys, rough fat, or tallow, in full proportion to their age and size; one of them a small sheep, was judged to carry as much wholesome flesh on the spine, as some sheep would, weighing forty pounds *per* quarter.

Several rams, brought over with the flock, were of

a shape unfit to breed from §; notwithstanding the sacrifice was great, prime cost and heavy expences of the voyage considered, they were cut about the middle or end of October; and although very low in order at that time, even these have exhibited a tendency to get fat, which absolutely surpasses belief. Some of them were spared to a gentleman near Taunton, and were judged by butchers to be fit to kill, and good meat in January. For two Merino ewes exhibited, fifty guineas were offered, in presence of the whole meeting, and more was ready to be given, if that price was not sufficient; it was not accepted.

§ Out of thirty-three Merino rams, of pure blood, thirty were not fit to breed from, with a view to improvement of any thing but wool, and one only, from which rapid approximation to that outline or frame indispensably requisite in the eyes of every British farmer, could be expected.

[To be continued.]

For the Agricultural Museum.

On the Scab on Sheep.

Communicated by a Farmer of respectability and experience in the upper part of Virginia.

It is of the first importance that all persons who are engaged in sheep breeding, and especially those who are purchasers of the imported Merino sheep, should guard well against any disease they may chance to bring with them—one in particular that is not so discoverable, the scab; which frequently does not apparently affect the health of the sheep, or reduce his fat, until having gained a considerable ascendency. Its first appearance is a deadness and dryness of the wool, it being both thinner and shorter, the flesh preserving often a healful appearance. As this disease is contagious it should be carefully guarded against. Every Merino not having the most perfect health (which is rarely the case after a long voyage) should be well washed in warm water and soap, this should be repeated if health is not restored, which may be always told by the growth and ap-

pearance of the wool, and the uniformly red colour of the flesh. If the scab has taken hold of the flesh, the same method is to be pursued, and in addition the sheep must be anointed with hog's lard and spirits of Turpentine, or lard and lye, tobacco juice, or something of the kind. The sheep remaining 2 or 3 days annointed then washed out with soap; twice or thrice will generally be sufficient. There are some persons perhaps who are unwilling to deprive the animal of its peculiar stamp, that of having a stout coat of dirt and oil at the end of the fleece, an evidence of its real value and pure blood—but for the sake of this outward sign, it would be grievous that a fine Merino should be lost, or a whole flock contaminated.

»»»«««

Observations relative to the Pruning of Orchards, by THOMAS SKIP DYOT BUCKNALL, Esq. of Conduit-street.

From the TRANSACTIONS of the SOCIETY for the Encouragement of ARTS, MANUFACTURES and COMMERCE.

The Silver Medal of the Society was voted to Mr. BUCKNALL, for these Observations.

THE bark of trees, properly considered, consists of three divisions; the outer, rough; the middle soft and spongy; the inner, a whitish rind, being that which joins the bark to the wood; and this last is supposed to contain the liquid sap. It is constantly observed, that when the stem of the tree grows too fast for the bark, it causes blotches and lacerations; which evil is properly avoided by scoring the bark with a sharp knife: but care should be taken not to cut through the whitish rind before-mentioned; for that heals very difficultly, generally ulcerates, and, by being cut through, gives the in-

sects § an opportunity of getting between the wood and the bark, where they are very destructive.

Any surgeon knows that a wound extending to the fine membrane, covering the bones of the human body, requires much more skill to cure than a flesh wound, and the case is similar.

Pruning is an important article with regard to the health of trees, and their bearing; and, if judiciously done, they will come into bearing sooner, and continue in vigour for nearly double their common age: but the systems of pruning are so wordy, that the common farmer cannot understand them; and the gardener thinks the orchard beneath his care, for which reason it is left to nature and the winds; for, the farmer, afraid of doing wrong, never troubles himself about it, unless, seeing a branch half-broken, he takes his bill, and knocks it off, perhaps four or five inches from the trunk, leaving an unsightly stump. Do not imagine this is intended as any reproach; for there are no men who spend their time more judiciously in their vocation, but they cannot run into speculations; if they did, little rent would be paid. I give no attention to fruit branches and wood-branches, as being unnecessary in the present instance; and beg, once for all, that no branch shall ever be shortened, unless for the figure of the tree, and then constantly taken off close at the separation, by which means the wound soon heals. The more the range of the branches shoots circularly, a little inclining upwards, the more equally will the sap be distributed, and the better will the tree bear; for from that circumstance, the sap is more evenly impelled to every part. Do not let the ranges of branches be too near each other; for remember, all the fruit and the leaves should have their full share of the sun; and, where it suits, let the middle of the tree be free

§ Insects, such as ants, earwigs, and many species of millepedes, with numerous microscopic creatures, of which I know no name; but all of which obstruct the healing of the wounds, by their constant eating and fretting the tender bark.

from wood, so that no branch shall ever cross another, but all the extreme ends point outwards.

The best compliment your neighbour can make is, that your trees are handsome, but too thin of wood: be it so; and you may say, "True, farmer; but I have the best price at market, and that will always be the sure test of perfection."

My tenant, Mr. Boulding, planted an orchard in 1772: being on a rich soil, it throve surprisingly. That vigorous growth occasioned the after decay of the trees; for the wind, having great power over them, split them down; the ladders, in gathering, broke; the wood being soft, many causes concured to injure them; and the injudicious manner in which the lacerations were taken off added to the evil; for, there generally follows gum from a wound, which being sweet in fruit-bearing trees, the wound becomes filled with vermin, which obstruct the healing by their constantly eating and fretting the young bark.

Being informed of the situation the orchard was in, I went down in the spring of 1790, and found the branches so intermixed and entangled together, that in many places they had cut each other nearly half through, causing wounds and blotches; which, on the return of the sap in the spring, always affect the leaves, by inclining them to curl, and is a proof that the sap is vitiated.

Having examined the circumstances, I told the tenant I would come down in the autumn, when proper persons must be found to execute the business, and we would reinstate the orchard, and bring it to its former splendor; for, it should be observed, the orchard used to be much admired. Accordingly, I went the first Tuesday in November, and for two hours walked over the ground with the men, instructing them what I would have done, that we might begin the next morning, work with spirit, and lose no time. We had saws, bills, and knives, prepared on purpose; and, though I am a good hand myself, I soon perceived neither of us could cut true enough with

a bill to take off the branch, without leaving a stump, or improper wound; for it is essentially necessary, that every branch should be cut perfectly smooth and close; for which reason we took the saws, and afterwards smoothed the place with a knife. My servant's business was with a painter's brush, to smear over the wounds with a medicated tar hereafter described.

It is impossible the bark can grow over a stump, because there is no power to draw the sap that way; for which reason always cut a little within the wood. I was constantly directing to cut quick, close, and smooth. We kept together, first walked round the tree; then I pointed out every branch that came near to the ground, or had received any material injury, or where the leaves were much curled; for, where the leaves curl, the fruit is always speeky; and every branch which had the least tendency to cross the tree, or run inwards, was taken off. Then we gave a little attention to the beauty of the head, leaving all the branches as nearly equidistant as possible: next, we examined if there were any remaining blotches, opening or scoring them with a knife, and where the bark was ragged from any laceration, pairing it gently down till we came to the live wood. Each of these was touched over with the medicated tar.

Having gone thus far, we should have rubbed off the moss and scored the trees, but I had not time for that part of the business; I only wish I had secured a person on purpose. In the cutting we followed the surgeon's rule, go to the quick, but do not wantonly make any wound larger than necessary.

We sometimes had our doubts whether a particular branch should be taken off. The idea I brought it under was this; consider whether it will be in the way three years hence; if it will, the sooner it is off the better.

When trees are much thinned, they are subject to throw out a great quantity of young shoots in the spring,

which I requested the tenants to be particularly careful to rub off. It is necessary that they be rubbed, and not cut; for cutting increases the number.

As our work drew near a conclusion, one of the tenants said, "we understand our business so well, that I wish we had another job;" upon which my servant observed, "you had better keep in your own parish, for the people are much dissatisfied." The truth is, we had no comforters, for the country was against us. If the land had been under my own culture, I should have taken off half as much more; but I did not choose to offend the person whom I wished to instruct.

I went down again, in the spring of 1791, to see the effect, and found the tenants much pleased with the operation; I did not find one wound in an hundred but what was in a clear healing state, and the healing of the wound is the business; for nothing but prejudice can make a person think that a tree overloaded with wood will produce good fruit. You may as well expect a crop of turnips without hoeing, and I am in great hopes that pruning will become as general as hoeing; I am sure it is as necessary.

The medicated tar above mentioned, as used in the foregoing experiments, was composed of one quarter of an ounce of corrosive sublimate, reduced to fine powder, by beating with a wooden hammer, and then put into a three pint earthen pipkin, with about a glass full of gin, or other spirit, stirred well together, and the sublimate thus dissolved. The pipkin was then filled, by degrees, with vegetable or common tar, and constantly stirred, till the mixture was blended together as intimately as possible; and this quantity will, at any time, be sufficient for two hundred trees.

To prevent danger, let the corrosive sublimate be mixed with the tar as quickly as possible after it is purchased; for, being of a very poisonous nature to all animals, it should not be suffered to lie about a house, for fear of mischief to some part of the family

Columbian Agricultural Society,

At the meeting of the Columbian Agricultural Society, held at the Union Tavern in Georgetown, on Wednesday the 21st instant, the Premiums were adjudged as follows, viz:

Premium 1....Sixty Dollars,—For the best Bull;

To George Calvert Esq. of Prince George's County, Maryland:

Premium 2....Sixty Dollars,—For the best Cow with her first Calf;

To Osborne Sprigg Esq. of Prince George's County, Maryland:

Premium 3....Fifty Dollars,—For the best fat Bullock or spayed Heifer, for beef;

To William Stinnbergen Esq. of Shenandoah County, Virginia:

Premium 4....Forty Dollars,—For the best piece of fulled and dressed woolen cloth;

To Mrs. Anna M. Mason, of Analostan Island, Washington County, District of Columbia:

Premium 5....Thirty Dollars,—For the best piece of woolen Kersemere;

To Mr. George M. Conradt, of Fredericktown, Maryland:

Premium 6....Thirty Dollars,—For the best piece of Cloth, cotton warp, filled with wool, to shew the wool on one side;

To Mr. George M. Conradt, of Fredericktown, Maryland:

Premium 7....Thirty Dollars,—For the best piece of Fancy Patterns for Vests, of wool and cotton;

To Mrs. Martha P. Graham, of Dumfries, Prince William County, Virginia:

Premium 8....Thirty Dollars,—For the best piece of Flannel, all wool;

To Mrs. Sarah M'Carty Mason, of Hollin Hall, Fairfax County, Virginia:

Premium 9....Twenty Dollars,—For the best piece of Flannel, part cotton part wool;

To Mr. George M. Conradt, of Fredericktown, Maryland:

Premium 10....Ten Dollars,—For the best pair of fine woolen knit Stockings;

To Miss Patsey Shackelford, of Culpeper Court House, Virginia:

Premium 11....Ten Dollars,—For the best pair of fine woolen woven Stockings; None were offered:

Premium 12....Thirty Dollars,—For the best pair of fine woolen Blankets;

To Mrs. Martha P. Graham, of Dumfries, Prince William County, Virginia:

Premium 13....Twenty Dollars,—For the best pair of fine cotton Blankets;

To Mrs. Martha P. Graham, of Dumfries, Prince William County, Virginia:

Premium 14....Fifteen Dollars,—For the best pair of stout coarse Blankets, for labourers;

To Mr. George M. Conradt, of Fredericktown, Maryland:

Premium 15....Fifteen Dollars,—For the best parcel of flaxen or hempen Sewing Thread;

To Mrs. Elizabeth Gunnell, of Minorca, Fairfax County, Virginia:

Premium 16....Forty Dollars,—For the best woolen Carpet, or Carpetting in the piece;

To Mrs. Elizabath Maynadier, of Belvoir, Ann Arundel County, Maryland:

Premium 17....Fifteen Dollars,—For the best hearth Rug;

To Mrs. Elizabeth Maynadier, of Belvoir, Ann Arundel County, Maryland:

Premium 18....Twenty Dollars,—For the best specimen of durable Dye, with the Recipe;

To Mrs. Martha P. Graham, of Dumfries, Prince William County, Virginia.

The following Gentlemen were appointed officers of the Society for the ensuing year.

President. Osborne Sprigg, of Northampton, Prince George's County, Maryland.

Vice President. Thompson Mason, of Hollin Hall, Fairfax County, Virginia.

Secretary. David Wiley, of Georgetown, District of Columbia.

STANDING COMMITTEE.

Daniel C Brent, John T. Brook,	of Stafford,	Counties in Virginia.
John Williams, Robert Graham,	of Prince William,	
Wilson C. Seldon, William Bronaugh,	of Loudon,	
William H. Foote, Charles I. Love,	of Fairfax,	
Henry Maynadier, Charles Carroll, of Carrolton,	of Ann Arundel,	Counties in Maryland.
Joseph Kent, George Calvert, John Bowie, Thomas Davis,	of Prince Georges, of Montgomery.	
Philip Stewart, Clement Dorsey,	of Charles,	
Nicholas Fitzhugh, Wm. A. Dangerfield	of Alexandria,	Counties in District of Columbia.
John Mason, Tench Ringgold.	of Washington.	

The second instruction of the Society, at their last meeting, to the Standing Committee, ordering, "that at least two thirds of the amount of Premium to be given for Sheep, be for the long wooled breed," was rescinded.

The Standing Committee have appointed to meet on Wednesday the 5th day of December next, at 11 o'clock A. M. at the Union Tavern in Georgetown, for the purpose of fixing on the Premiums to be given at the General Meeting in May next.

The following are Mrs. Graham's receips for durable DYES.

Great credit is due to this Lady, on account of the quantity, variety, beauty and excellence of her manufactures, which were all spun, woven, dyed and finished in her own family.

TO DYE SCARLET.

One pound of Madder, (fresh gathered from the Garden), will dye two pounds of Wool. The Wool must be washed clean, then boiled about fifteen minutes in strong Allum water—The Madder is to be boiled in thin Bran water, (the Bran being carefully strained from the water.) The wool dripped from the Allum water, and put in the Bran water, must be boiled fifteen or twenty minutes, and washed out in soft soap suds after it is cool. By leaving out the Allum it dyes a good brown color.

TO MAKE A CRIMSON COLOUR.

To two gallons of the juice of Poke Berries, when they are quite ripe, add half a gallon of strong Vinegar, made of the wild Crab Apple, to dye one pound of Wool, which must be first washed very clean with hard soap. The wool, when wrung dry, is to be put into the Vinegar and Poke berry juice, and simmered in a Copper vessel for one hour; then take out the Wool and let it drip a

while, and spread it in the Sun. The vessel must be free from grease of any kind.

TO MAKE AN ORANGE COLOR.

Take a quantity of *touch-me-not* gathered on the stems, and bruise it well in a wooden mortar—On layers of touch-me-not and wool alternately, pour rain water or soft water from a spring until they are covered—let it stand twenty four hours—then have ready a strong lather of soft soap and wash it out and put it immediately in the sun to dry. Salmon color may be made by using hard soap instead of soft—These colors brighten by washing.

Touch-me not is found in low places—the stem is pale green, and the flower nearly of the color that it dyes—It grows as high as six feet.

Premium Steer.

Mr. Stinnbergen's Steer, for which he obtained the Premium on Wednesday last, at the Exhibition of the Columbian Agricultural Society, was a large and beautiful animal. He was killed the next day at the slaughter house of Mr. Krouse. He was but six years old and weighed as follows.

	lb.	
Beef	1402	
Hide	123	
Tallow	190	
		1715
Head	56	
Feet	25	
Liver	48	
		129
Blood	87	
Entrails	273	
Wastage	50	
		410
Whole weight of carcass as on foot,	lb. 2254	

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To the Editor of the AGRICULTURAL MUSEUM.

Sir,

Few persons have a higher idea of the utility of Associations for diffusing knowledge, and stimulating the minds of men to useful exertion, than the writer of this; he cannot, therefore, but rejoice at the establishment of the Agricultural Society, in this District. As composed generally of practical Agriculturalists, and for the furtherance of their pursuits, it appears to be taking a direction towards objects of minor importance, altho' highly patriotic and of great national utility. You will, no doubt, perceive, I allude to the Premiums given for those products of Art and Manufacture, which, at your Exhibitions, place on the pinacle of fame the good House-wives and domestic Spinsters of our country. I will not now attempt an examination of how far, in our present state, it is preferable to direct domestic exertions in manufacture to superiority of quality, rather than to an increased quantity of home made articles: whether it would not be better, that our domestic industry should be applied to the relief of our most pressing and indispensible wants, now supplied from other nations, and to the increase of real comforts, rather than to rivalling the finer manufactures of a more luxurious people,—manufactures which require great subdivision of labor, and extensive capital to carry them on profitably; and, whether in some degree it is not defeating a great object of the Institution.

A Society for the encouragement of the Arts, Manufactures and Commerce of our country, would begin as our Agricultural Society have;—whilst the views of its members would extend to these objects only, they would be

more likely to serve their country in that way, and have their endeavors crowned with success. It may not yet be too late to enquire into the propriety of confining the views of the Society to Agricultural pursuits. To increase the number of useful vegetable productions, and perfect the mode of their culture; to compare the cultivation under which the same plants thrive best here, with that which is practised in other parts of the world;—to attend carefully to the perfection of our Orchard culture and its produce;—to encourage live fencing, and the planting of forest trees, so as to mitigate the growing evils arising from the wanton destruction of our woods; to try the effects of the various manures, and of rotation in cropping, are all objects of the highest importance to Agriculturalists, and particularly in this portion of the Union, which has so materially suffered by the exhausting course of husbandry pursued by our Predecessors. If to these be added the improvement of Stock, it is probable that subjects of investigation, experiment and industry, more immediately useful, will be suggested, than are now pursued. I mean not to undervalue the present course of the Society, but to call its attention to the consideration of whether it is the most useful.

If this meet with your approbation, and its insertion be consonant to the plan of your useful publication, it may lead to other communications on these subjects from your friend

FRANKLIN.

Extract from Lord Somerville's Essay on Sheep.

Continued from page 166.

This subject has, at length, excited a more than common interest, and numberless questions are asked as to the return, or profit, per acre, on clothing or fine wool; this will depend on the nature of the keep; if sheep are to run on pasture land only, during the whole year, so much will depend on the nature of the seasons, that no fixed value, or specific rate of stock can well be given

If a large portion of this grass is to be kept hained up for winter, and the season be not favourable, autumn rains, followed quickly by frost, will kill very much of the foggage, and the sheep will consequently be very hard driven for food from Candlemas to the next shoot of grass, however late that may be. The quantity, indeed, of stock to be carried per acre, as well as their health and good condition, must be in proportion as there is more or less produce; and on the competent and regular supply of food, the growth of good wool wholly depends. To elucidate this subject, I cannot do better than give Dr. Parry's general statement of my claim for the Bath Society's premium, offered "for a change of breed of sheep, with positive profit resulting therefrom," and his conclusions thereon, which is, on all hands, acknowledged to be one of the most able sketches ever given to the public.

"About the year 1809, Lord Somerville's stock (as stated by him in his Memorial to the Society) consisted of forty-five ewes, of the long-wooled sort. Finding these annually degenerating, and also becoming annually less profitable, he changed them, at the above mentioned period, for one hundred and fifty Ryeland ewes. In the first year, though the winter was severe, the ewes supported themselves tolerably well, and the lambs were in very good order at weaning time. In their future growth, as wethers and store ewes, they far exceeded in weight their parent stock. One lot of the wethers sold as high as three pounds each, and were fed upon grass and hay only. In the following year, Lord Somerville brought from Spain some rams and ewes, of the Merino breed. These rams, in each subsequent year, have been, and now continue to be put to ewes of the South Down and Ryeland breeds; from each of which crosses a valuable species of sheep has been obtained, both in fleece and carcass, the relative value of which has been detailed by his Lordship, in his Memorial of 1802; the substance of which is, that South Down store ewes, at three pounds

per fleece, and at 1s. 10d. per pound, will pay 5s. 6d. per fleece; which, at 6 1-2 per acre, in good upland pasture for seven months, and five months in turnips, at 14 or 15 per acre, will pay 38s. or 40s. per acre. Ryeland store ewes, two pounds and a quarter per fleece, at 2s. 2d. per pound, untrinded, nine sheep per acre, and turnips as above, will pay 2l. 3s. 10 1 2d. per acre.

"South Down and Merino ewes, of the half breed, at four pounds per fleece, clean washed, and 3s. per pound, will amount to 12s. per fleece; which, at 7 1-2 per acre, for seven months, amount to 4l. 10s. per acre, for the pasture land, with turnips as above for winter keep. Ryeland and Merino ewes, of the half blood, at 10 per acre, for seven months, and turnips as above, at 3 1-4 pounds per fleece, and 3s. 2d. per pound, amounts to 6l. 10s. 5d. per acre.

"The pure Merino fleeces never sold at less than one guinea each; the average weight of which has been more than six pounds each, in the yolk; and on the above allowance of pasture for seven months, and turnips as above, in aid of that pasture, the return will amount to ten guineas per acre.

"At the last meeting of the Society, a paper having been read, as the report of a Committee appointed by the Society to examine the state of that part of the farm of Lord Somerville, which is appropriated to the feeding of sheep, the Society ordered that report to be printed, and sent to various members for their consideration, previously to the next meeting, in November, at which they were requested to deliver their opinions on the said report. A method of proceeding, so new to this Society, must have implied, not surely that the facts there stated, were incredible, but that the subject itself was so important to individuals and the community, that every circumstance relative to it could not be too thoroughly investigated, or too generally known. The Society will please to recollect, that this report is that of a Committee nominated by themselves, to examine Lord Somerville's

claim to the premium, Class 4, No. 15, p. 45. which is offered to the stock farmer who shall have bred and kept, in the usual mode of husbandry in the neighbourhood, the greatest number and most profitable sort of sheep, in proportion to the size of his farm, in consequence of his having changed his sort of sheep from what had been usually kept on the farm, or on similar farms in the neighbourhood.

"In order that a breeding farmer may maintain the number of his stock, he ought to sell in the year no more store-sheep than will be supplied by his lambs. It appears, however, that Lord Somerville disposed of forty-six more than his proportion: that number should, therefore, probably be set in abatement of his profit for the year.

"The average price of the sale sheep having been 1l. 17s. 2 1 4d. the sum to be deducted will be 85l. 12s. 6d.

"We are now prepared to state the general account:

				l.	s.	d.
Wool				446	0	0
Store sheep sold				409	3	0
Fat sheep				238	16	0
Letting of rams				524	10	0
Turnips to two bulls				4	12	0
		Total		1623	1	0
Deduct						
Keep of sheep	l 18	0	0			
Hay at 50s. per ton	15	0	0			
Diminution of stock	85	12	6	118	12	6
This leaves a balance of				l. 1504	8	6

"Which is 9l. 1s. 3d per acre; or, if the 524l. 10s. for letting rams, be deducted, the balance will be 979l. 18s. 6d. which is 5l. 18s. per acre. If the allowance of fifty-five acres, for extra stock, as above stated, be thought too great, the return per acre must suffer a proportionable abatement.

"I must add, that the average value of Lord Somerville's sheep land, does not exceed 36s. per acre. From this view of all the particulars of the report, I am of opinion, not only that Lord Somerville is intitled to the premium offered by this Society, but that he justly merits the most grateful acknowledgements of his country.

"C. H. PARRY."

"14th Nov. 1804."

The second Essay which was given in on this claim, not being in print, I have great pleasure in being enabled to give it entire. No man is more competent to give an opinion in these points, than the writer, whether we advert to his ability or integrity.

"I had the honor to receive the report of the Committee appointed to investigate the claim of Lord Somerville to your premium, No 15, Class 4; with a request that I would attentively examine the same, and furnish the next meeting with my observations. Having for some years had experience of the Merino breed of sheep, and the usual crosses of them, I am the less surprised at the result of that investigation, so highly favourable in profit to that particular sort of sheep. To the exertions of your Society, in that branch of agriculture which relates to the improvement of our clothing-wools, the country is likely, in due time, to reap the most important advantages A project which, by many, was considered as a wild and fanciful theory, and which at first had to encounter the most obstinate prejudices, has been gradually and steadily advancing. The various specimens of superfine cloths and kerseymeres, manufactured from wool of British growth, which have been exhibited at several of your last annual meetings, have, I trust, been satisfactory proofs of the practicability of improving our native wools to a degree far surpassing what was expected in so short a time, even by the most sanguine. It had been, as I understand, a point long settled with the manufacturers, that superfine broad cloth could only be made of Spanish wool, and that any admixture of Bri-

tish wool degraded the quality of the cloth, and disgraced the Manufacturer. To many, this seemed an alarming circumstance, and it surely was a matter of just regret, to find that the most precious fabrics of our grand staple manufacture depended upon the precarious supply of a foreign, and oftentimes a hostile country. To render this kingdom independent of a foreign supply, of so requisite and so valuable a raw material, must always have been a desideratum to the patriot, and the politician. In this point of view, it was an object worthy of your Society to promote, to the utmost of your power, so laudable an achievement. The efforts of Lord Somerville, Dr. Parry, and some other members of your Society, have been, I doubt not, duly appreciated; and you have seen, both in the wool and in the cloth and kerseymere produced from the Merinos, and their respective crosses, such articles as, ten years ago, no one would have admitted the practicability of raising on our soil, and under the influence of our climate. However, the patriotism of individuals, or even the efforts of a society like yours, would be able to effect but little in so extensive a design. To point out its utility, and to shew its practicability, would be all that could be expected in the early stages of the undertaking. Whatever benefit the country might derive from raising superfine wool for our own supplies, little could be expected to result from the theory, unless it should be made to appear clearly, that it was manifestly the interest of the individual to promote it. With a view to ascertain this, I presume your premium was framed; and, in this light, the report of your committee appears to be very important. To me, from my own experience, it is perfectly satisfactory. The South Down and Ryeland sheep, with which this comparison has been made, are, in my estimation, among the best races of the kingdom. The return of Lord Somerville's South Down wool was 5s. 6d. per fleece. My average has been, in general, not more than 4s. 6d.; that of my Rylands about the same as his. In the year 1803, my sheep

of the Merino and South Down, and of the Merino and Ryeland first cross, produced me an average of three pounds six ounces each, which brought me 11s. 6d. per fleece. My thorough-bred Merino fleeces of that year, twenty-six in number, weighed in the yolk five pounds fifteen ounces each, and sold for 18s. 9d. per fleece. This year, my pure Merino fleeces, fifty-seven in number, weighed in the yolk, three hundred and forty-eight pounds, which is more than six pounds per fleece. My fleeces of the first cross, weighed this year, three pounds eight ounces each. The present years price of my wool I have not yet ascertained. It will appear, therefore, that the result of Lord Somerville's return from the different sorts of sheep, accords as minutely as distance of place and difference in management will allow.

"In respect to the number compared to the extent of Lord Somerville's farm, they will appear to be placed very thick upon the ground. However, my own experience agrees very much with this result; and I have no doubt, making allowances for my other stock, but I have this year, had equal numbers, in proportion to my means of keeping them. My flock consists of nearly the same numbers as Lord Somerville's; to the management of which, I find a man and his son, of ten years of age, fully competent. I have yet met with nothing discouraging in the propagation of this new race of sheep; on the contrary, they have far surpassed my expectation. Since the year 1801, they have done well in a sheltered spot in the vale of the Severn; and they are doing well in a high situation in the heart of Staffordshire. Since the year 1804, I have lost but three Merino sheep, one in yeaning, another, I believe, from old age, and one from a stoppage in the stomach. From the smallness of the number of this race in the kingdom, I should not think myself justified in making experiment of the hardships they would be capable of enduring: a little extra care would be well repaid in most of our native breeds. The very few Merino lambs I have lost, compared with the common casual-

ty, is a proof of this. I have, this season, put four hundred and fourteen ewes all to Merino rams, and I am endeavoring, as fast as I can, to bring my flock to that blood, convinced of their utility, both in a public and in a private point of view. From the distance at which I now reside from Bath, I unfortunately am little acquainted with your transactions. Whether Lord Somerville has any competitor, I know not; but I think, from the report of your committee, that it will be difficult to find a stock farmer, who, in proportion to the size of his farm, possesses a greater number, or a more profitable sort of sheep. I am very sorry it is not in my power to attend personally; and I trust the Society will excuse the defects of this hasty communication.

I have the honour to remain, Sir,

"Your obedient, humble servant,

"G. TOLLETT."

"P. S. The letting of the rams may, to some, appear a temporary rather than a permanent source of profit. However, from the price of Spanish wool, and from the interest which the country begins to take in this line, the rams are likely, for a long time, to be in great request. But, putting them out of the question, Lord Somerville appears to have made from his wool, and his store and fat sheep, as much as, I suppose, will cover two rents of the whole farm of 460 acres; but which return, in reality, has been made from 188 acres only. From the price of the store sheep sold, I should presume many of them were the draft ewes of the English breed; as ewe sheep, with any cross of Merino, would have unquestionably brought a higher price: so that, when the drafts come from that stock, if wool bears the present price, the profits will be considerably greater. I have now some two-shear wethers of the half breed, of South Down and Ryeland, that would weigh from twenty pounds to twenty-five pounds per quarter; they are decidedly better than the South Downs of the same age, that have

been bred and kept with them; I think they have stood the climate of this country better."

"*To the Bath Agricultural Society, Nov.* 9, 1804."

We ought, perhaps, to apologize for these details, which many may think prolix; but it must not be forgotten, that subjects of this nature are liable, beyond any others to misconstruction; sometimes to selfish and wilful misrepresentation.

It was unfortunately and falsely conjectured, that attempts were made to prejudice the minds of the people against the long-wooled breed; on the contrary, by a caution against their adoption in soils and climates ultimately unpropitious to these breeds, essential service was done them. By attempting to prove too much, we are apt to prove nothing. Any man then, who studies wool bearing animals, must with regret hear the advocates for certain distinguished long-wooled breeds assert, that they will do well on Snowdon, and prove on Plinlimmon; and yet such language has not unfrequently been held.

The dignity and utility of this subject, has been acknowleded in all ages, and in every corner of the civilized world; we love it for its own sake; and it is necessary we should do so, to endure with patience the unworthy treatment to which it too often exposes us. We shall never be induced to make it subservient to dirty, political intrigue.

[To be continued.]

Cotton Factories.

I have employed no small part of the time since I have been in Manchester in visiting those extensive manufacturing establishments, which are the wonder of the world and the pride of England. Every facility has been afforded, by the proprietors, in the most liberal and attentive manner, which could give me the fullest view of

those works that furnish the United States so a large a part of their clothing. But, after all, I find very little to write on a subject where you will be prepared to expect much. An attempt to describe the intricate machinery, and the curious process by which our convenience and comfort are consulted, or our vanity gratified, would be both tedious and useless. Even when one is standing amidst the din of ten thousand spools; and the sounding of as many shuttles, he has scarcely any distinct comprehension of the intermediate steps by which he sees the wonderful results produced; and must himself become a weaver, or a spinner, before he can detail to another the particulars of these seemingly simple arts. Yet my impressions have not been altogether too vague for description.

It was a new fact to me, that the most beautiful of the chintzes are stamped by means of copper cylinders, on which the figures are engraved; these cylinders are covered with the proper substance, and then impressed on the stuffs by rolling.

The velvets are woven at first without any of that downy coating, which makes them so pleasant to the touch. The threads which are to form this shag, are, in the first instance, inserted at both ends in the very texture of the cloth, so as to produce a vast number of small loops, running in rows from one end of the piece to the other. These loops are cut by hand. The cloth is extended horizontally on a machine, and the artist inserts among the loops a long slender knife, much resembling a very delicate sword; this, guided by one hand only, he pushes along so dexterously, as to cut the whole series of loops for several yards, at one thrust, without piercing the cloth, unless a knot or other obstacle turns his instrument aside. This operation being repeated along every thread in the whole breadth of the piece, a shag is at length raised over the whole surface. But it would be very rough and inelegant if left in this state.

To remove its roughness, the whole piece is made to pass rather slowly over a red hot iron cylinder, and in absolute contact with it; and during the whole operation, the iron is maintained at a red heat, by the aid of a furnace. I would not assert a thing seemingly so incredible, had I not witnessed the process; and my astonishment was not less than your incredulity will be, provided the fact be new to you. This operation is not confined to the velvets. Most of the cotton goods are singed in the same manner, to smooth them for the final finishing; and they assured me, (what indeed appears scarcely credible) that the finest muslins were treated in the same way.

The new process of bleaching is now extensively introduced at Manchester, and has, I believe, nearly subverted the old. The bleaching which used to occupy months, is now performed in a few days.

Manganese, sulphuric acid, water and common salt, are placed in large leaden stills, heated by steam. A very suffocating and corrosive gas § rises, which is made to pass into water, having abundance of lime suspended in it; the lime condenses the gas, and produces with it the bleaching drug, into a solution of which the goods are plunged, and it is wonderful with what rapidity the colour is discharged. Some weak acid is usually added to liberate the bleaching principle. This method of bleaching is a discovery of modern chymistry; and when you consider that all the coloured cotton stuffs must be first bleached before they can be dyed, you will see at once the great importance of the discovery. The saving is in time, for the materials are more costly than those employed in the old way.

A great deal of American Sumac is used here in dying. I learned in one of the dye-houses, that the Americans give themselves unnecessary trouble in grinding

§ The chlorine muriatic.

this article, and that it is quite as useful in the state of leaves, merely dried, and packed in that condition. Probably there may be so much saving in freight, in consequence of grinding, as to pay for that operation.

The factories here are very numerous, and wonderfully extensive. Some of them employ 1200 people, notwithstanding the application of the steam engine, as a moving power, in a great multitude of the processes. The country, for many miles around Manchester is tributary to the great factories. Spinning, weaving, and other preliminary operations, are performed in the villages and cottages, and the fabrics are brought into town to be finished. While I was walking with some of my stage companions through a village near Warrington, a shower caused us to seek shelter in the cottages, and we found the people employed in this manner; their appearance was neat, cheerful, and comfortable.

[*Silliman's Travels.*

For the Agricultural Museum.

THE ADVANTAGE OF WORKING OXEN.

Among the subjects which claim the notice of the American Agriculturalist, *The Advantages to be derived from working* OXEN is one of no small importance. The writer had flattered himself that it would have employed the pen of some gentleman of experience, and occupied a place in the Agricultural Museum at a much earlier period. Sorry that his expectations have as yet been disappointed, he would make an effort to direct the attention of the public to an object which he conceives to be of great and encreasing utility. He promises but little from his own resources. His opportunity for observation and experiment has been limited. He will therefore confine himself in a great measure, to an Exhibition of the beneficial results which have accrued, in other places, from the use of those valuable animals; and, with this

view, will take the liberty to offer the following Extracts from the Agricultural Survey of Norfolk in England.

"Next to the recommendation of the best modes of culture, the cheapest means of effecting it, deserve our attention, and, lastly, frugality in the consumption of the produce.

"If it is a fact, which cannot be disproved, that oxen, in some sort of work, are equal to horses, in these cases, they certainly ought to be preferred, because they are kept at considerably less expence, and less casualty attends them. It would evidently be very much for the advantage of this country, if oxen were in higher estimation than they are: upon every farm where three teams are kept, one of them, at least, ought to be an ox team; for though oxen would not, perhaps, entirely answer the end, to the total exclusion of horses, there is, undoubtedly, a great deal of work that they would, as before observed, do as well, particularly in carting and all heavy work. In most instances, they are nearly equal to horses, and, in their support, they are fully thirty per cent. cheaper. There is this country, a strong prejudice against this generous animal, which is the first thing to get over—when that can be removed, the credit of the ox will soon follow.

"The principal advantage which the farmer would derive from oxen, is in the moderate expence of their keep, and in their being attended, as I have before observed, with less risk.

"The best way is, however, not to over-work them, for in that case, they will require rather more hay than a horse, and half as much corn, and if they are suffered to fall into low condition, it will require considerable expence and time to get them up again.

"In the summer months they should have a pasture to run in, where there is plenty of water and an open shed, where they should have a bait, on the days they are worked, of green vetches, cut grass, or any thing the

farm might furnish. In the winter, they should be kept in a yard, with the same sort of shed for them to run into at pleasure, and here they should have plenty of barley or oat straw, and offal turnips, and in the days of working, cut hay and straw, mixed in equal proportions, instead of straw, and turnips besides. In this manner, they will, in general, do extremely well, and will, at all events, earn as much as the value of their keep, so that their work will be had for nothing. Another great advantage is, that in case of falling lame, there is no diminution, by that means, in their value, for if their shoulders do not return a profit, their ribs will; but if a horse falls lame, at least half his value is lost. So far I have described the advantage of the ox to his employer—but to the public, the advantage is superlatively striking.—The ox, when labouring, does not consume so much corn as the horse, for, according to my plan, he would not consume any; and when his labour is done, his body goes to the nourishment of men—but the body of the other is good for nothing but to feed dogs.

"The more the number of horses can be lessened, the better for all ranks of people. The consumption by horses, especially horses of pleasure, and luxury, is astonishing; for though a horse in agriculture, does not consume above three acres of the fruits of the earth in a year, a horse kept upon the road, eats yearly, in hay and oats, the full produce of five acres of land. A man, allowing him a pound of bread, and a pound of meat a day, or in that proportion, not quite an acre and a quarter; and as the poor eat but very little meat, it cannot be put at more than an acre to them: so that one of those horses eats nearly as much as five men. The more, therefore, we reduce our number of horses, the more plentiful will be the fruits of the earth for man."

[To be continued.]

THE ALMS HOUSE.

"For the support and employment of the Poor," of Philadelphia, is an institution of great benefit to paupers, and relieves the citizens of Philadelphia from a heavy burden, by the prudent economy of its management.—An account of its operations has been published. From this we learn, that 1294 poor men, women, and children, on an average, have been constantly supported during the year ending May 23, 1810; sometimes there were 1482 paupers receiving relief.

In the manufactory which had purchased raw materials, machinery, &c. to the amount of 17230 dollars, there has accrued a profit of near 4000 dollars—there having been sold manufactured goods amounting to 11,646 dols. The whole expenditure of the Alms House and House of Employment in the past year, after deducting clothing, provisions, &c. on hand at the beginning, is 76,035 dollars, a small sum compared with the quantity of misery relieved and comfort dispensed.

The spinning of cotton, flax, and tow, the hatchling of flax, and weaving of various sorts of goods, form very considerable items; but the relief afforded by the Medical Department of this House of Charity to persons afflicted with every species of disease, is the most striking feature in this good Samaritan Picture.—Of 2095 patients admitted, 1445 have been cured, 164 relieved, and 264 remain under treatment. From the list of cured we extract the following: Of abscess 8—asthma 12—atrophy 10—burns 17—catarrh 82—cholera morbus 18—diarrhœa 70—dropsy 20—intermittent fever 50—remittent or bilious 13—typhus 4—gout 3—inflammation of the stomach 25—leprosy 1—MANIA 67!—natural small pox, 2§—pleurisy 41—rheumatism 76—scrophula 13—consumption. 12.

This institution is worthy of imitation by every great city; being as good a model, perhaps, as could be devised; combining labor with charity, preventing idleness, and relieving poverty from famine and disease.

§ One patient died of this disease, while 17 patients vaccinated, all recovered.

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THE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

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Extract from Lord Somerville's Essay on Sheep.

Continued from page 166.

To conclude this subject:—When we consider the different latitudes, which, from authentic documents, we find congenial to the finest wooled sheep, the extremes of heat and cold from sixty-two degrees north, to thirty-five degrees south latitude, as Sweden, Denmark, Germany (for that also manufactures cloths of the very finest quality from Spanish sheep, long established there); as Holland, Spain, and the colonies inland from the Cape of Good Hope, where the wool of the Merinos has rather improved than degenerated; few men will hereafter venture to assert, that we, who are placed between both, cannot maintain, in all its purity, that which originally, it is said, belonged to Great Britain.

The author has frequently endeavoured to impress on the minds of the landed proprietors of Scotland, the absolute necessity of providing some rude, but secure shelter, for the flocks which range during winter on the moor-lands and mountains; but his labour was of no avail. His idea was, supposing a tract of such land to consist of 1200 acres, to class it in two or three divisions, the best adapted of which to be preserved entire for winter-keep; not suffering it to be depastured at all after the month of May, in order to get a head of grass or sheep-keep of such quality as it may be, and on it to erect a rude and cheap circular building, similar to any of those before described.

On muirs of this description, springs rise in such numbers as to produce many mosses or bogs; the quality of the herbage growing on these is often good enough to be

mown for hay. If the sub soil be dry and without mineral impregnation, the water which flows through the soil, usually produces a green herbage, which, in a high northern latitude, is not liable to infect sheep with the rot, as in the more southern districts. If drains were cut transversely or obliquely across these bogs, they will serve also as carriages, as the same water which before soaked through them would be thrown over their surface, and produce a rapid and surprising improvement. This hay should be stacked near to the sheep cot; dry earth, fern, or heath, being from time to time spread over the bottom of the cot, the sheep will have their bellies, when lying down, kept dry; and a great deal of excellent manure will be made, whilst the profit, as far as relates to the health and security of the flock, will be great beyond the conception of those who, residing in less exposed districts, know not the force of winds and snow, or the dreadful havoc occasioned by their combined influence.

Where low cultivated land is attached to a district of this kind, additional keep will, of course, be obtained, and the flock will be wintered on it; in this case also, the cot would be most beneficial. And in those mountain districts, it may be a question, whether the stock to be carried on them, if so treated, might not double or even triple in number the old stock, at the same time that immense losses would be avoided.

Having stated this in a plain and distinct manner, again and again I contented myself with merely expressing a determination, to act on this principle, when the lease or tack of one of the farms of this description, in the Lammer muir in Berwickshire, consisting of 2400 acres, should expire, and said no more on the subject.

The grassy hills of Selkirk and Dumfries shires are far better suited to carry sheep, than the "heathery" or heath-growing muirs of Berwickshire; but although the quantity of sheep to be depastured per acre cannot be so great, still the effect will in proportion be the same: great

to extent as the farm above mentioned is, if my memory serves me, it carried only 300 black-faced highland ewes, and their produce, the lambs being annually sold off.

After some considerable time, this circumstance was brought to my recollection, by the celebrated Mr. Walter Scott, who says, 13th Feb. 1808, "There is a curious and rather interesting subject, I have to mention to your Lordship. Do you remember dining at Ashestiel, with some farmers, when a good deal of conversation took place, about housing sheep during the winter? A few days ago, I received a letter from a person connected with one of them, covering a sort of treatise on the subject. It seems he had at first considered the plan as absolutely fanciful, but like most strong headed men, he had dwelt upon it in silence for two years, and at length had seen its propriety; and considering the possibility with particular relation to the sheep grounds of Selkirkshire, he has pointed out some local advantages, and obviated some local objections to an experiment. I should have liked to have sent this essay to your Lordship, and indeed he was desirous you should see it; as for me, I know no more of sheep, than I do of elephants; but there always struck me to be a degree of common sense and common principle, however contrary to common practice, in the plan of dividing a sheep-walk, and having places to house sheep on each division."

The young man writes thus: "I think it was once about two years ago, when you was at ——— ———; you mentioned a plan of Lord Somerville's, that he thought would be a great improvement in sheep-farming. I have thought of it at intervals ever since, and although almost every person to whom I mentioned it, thought it very extravagant, as I likewise then did: yet I am now of opinion, that it is not only practicable, but would become highly advantageous in many situations, and perhaps at length of great national benefit. I have sent you some observations upon the subject, which I have put together after a good deal of consideration; and I

request your opinion of the scheme, for I have found it of value upon all subjects. There is no person can be so much interested in the success of such a plan as the Duke of ——, for his high land is mostly all strong and grassy; therefore I wish the paper were shewn to —— ——, or his Grace, and I hope you will be so good as to take the trouble of doing so upon some opportunity. I am almost certain, that his Grace will think it worthy of a trial, and I apprehend I have some right to be a candidate for carrying it into execution. If he does not, you will introduce me to Lord Somerville; for it would be folly in any farmer almost, to attempt such a thing upon his own character, and it would go near to overwhelm a young man, with the deluge of ridicule that would certainly be the consequence. For this reason, you will see the propriety of speaking to none about the matter, who would be apt to mention it in the country. I remain, Sir, with much esteem and respect, your most obedient servant,

Jan. 4, 1808. "—— ——."

Again, in the course of three months, Mr. Scott recurs to the subject, 15 May, 1808: "Should you carry your Lammer muir experiment through, permit me most earnestly to recommend —— ——, as a superintendant. If you think that he is likely to be too expensive an overseer, I would endeavour to procure you the assistance, of another, who is also an advocate of the penning system. It seems to be an essential point, that you should have a Scotch shepherd, acquainted with the customs of the country, where an Englishman would probably break his heart; and on the other hand, that he should be a person void of prejudice, and, from conviction, deeply interested in the success of the plan.

"Excuse the liberty I take in pointing out these circumstances to so much better a judge; sure I am, that the waste of animal life on our hills in this last spring, has been an immense loss, both to the farmer and the coun-

try. Your Lordship is most heartily welcome to use my letter as you please."

It may raise a smile to notice the circumspection this young farmer thinks it necessary to use; but thus it is, that every new proposition is at first received: fortunate, indeed, is that which, after a lapse of two, or even ten years, produces any visible effect. It is very sincerely to be wished that others, when open to conviction, would have the courage and candour to confess as much.

It would not be advisable to close this subject without reverting, after additional experience of five years, to such parts of the subject before discussed, as depend on experiment for confirmation or refutation. And it may safely be asserted, that what was expected to happen, has, in almost, if not in every instance, come to pass; not only so, but the Merino Sheep imported, being now seasoned to the climate, have, from frequent barrenness and want of milk, become regular in their period of lambing; and, their age considered, excellent as nurses.

It never was even surmised, that in their wool they would degenerate; but on the contrary, it was distinctly maintained, that it would become finer, and upon obvious principles; and there is not a shadow of doubt that it has so been proved. Having studiously avoided any cross with other flocks, this proof may be considered as absolute; a judgment was not formed, from samples picked here and there, but from pieces of cloth annually exhibited, even to the present season, and in very considerable numbers, some of which were never exceeded in quality, and but rarely if ever equalled.

Let it not be supposed, that a conviction of the superiority of his own, which was made up from many different Trashumante's or travelling flocks in Spain, over other flocks of genuine blood, exists in the mind of the author. From one animal he has drawn all his improvement; for whilst he was breeding from him, to obtain

symmetry of form and early aptitude to feed, the Bath Society, as has before been stated, decided that his fleece was the finest which had ever come under its examination; and this attestation was confirmed within these few weeks, by an unsolicited and most candid declaration of Dr. Parry, that so perfect a sheep had never been imported into this kingdom. When others, in advancing the breed of this stock, seek a change of blood, which is sometimes necessary, they will know where to find it. Great improvement, it is universally admitted, has already been wrought in this breed, and much remains to be made; but it is unfortunate that those, whose lot, of necessity it must be, at first to embark in this speculation, are of a class who must commit that which they ought to support by every exertion, and watch over in person with unremitting attention, to the care of servants, for ever prejudiced against what they are not accustomed to. This is most disheartening, and bitterly tries the patience of those who know that success ought to be, but that disappointment will be, the sure result. But now that farmers have seen, and felt, and even *tasted* their way, the prospect mends; therefore it has been most gratifying to the author, that he has disposed of Merino Sheep within these six months past, to five different farmers, who live by their professions, men eminent in their several districts; and in every case, success will assuredly attend their labours.

[*To be concluded in our next.*]

The advantage of working OXEN.

(Continued from page 191.)

The Agricultural Survey of Norfolk was published in the year 1796. The Extracts from it, which have been given, are highly important. But the facts and reasonings very recently detailed by Lord Somerville, in his Essay on Oxen, are still more satisfactory and conclusive—as will appear from the following Extracts.

"The number of cart-horses employed in Great Britain, has been stated by Mr. Pitt, of Pendeford, Staffordshire, to be about 500,000, of which we are ready to admit that 200,000 may be useful, the remainder absolutely superfluous. These 300,000 consume, at a very moderate calculation, for nine months out of twelve, one peck of corn per day each, that is, 63 bushels each per annum. At 9 lb. per peck, and wheat at 15lb. per peck (60 lb per bushel) the fair average weights, 63 bushels of oats equal nearly 36 bushels of wheat. A quartern loaf, weighing 4 lb. 5 oz. some may think too short an allowance per week; to a labouring man, in health, it probably may be so; but upon the average of the whole mass of population, this calculation is generally thought to be correct: at this rate, fourteen quartern loaves work up a bushel of wheat; but two loaves may be allowed for bran and waste in grinding. Twelve quartern loaves remain, which, at one loaf per week, make four bushels and three quarters to each person annually. In Scotland, indeed, where oats are the food both of men and horses, this comparison need not be drawn. A man, with a wife and four children, requires on an average about four pecks of good oats per week (10 lb. per peck), 208 pecks, or 52 bushels per ann.; a labouring horse a peck and a quarter per day, for eight months in the year—280 pecks, or 70 Winchester bushels per ann.

"It appears, therefore, that one cart-horse moderately, or rather immoderately fed, consumes more than the corn or bread of seven persons; so that 300,000 cart-horses consume annually, as much or more than 2,100,000 persons; which admitting the population to be ten millions, is more than a fifth part of the whole. Here then is a loss of more than ten weeks consumption of the whole kingdom. Admitting the import to be equal to six weeks, there will remain for export one month's consumption, or one twelfth of the whole produce, to say nothing of the supply of beef arising from the substitution of oxen, which of itself would make a very great difference. This

calculation is formed from the datum of Mr. Pitt (then a great advocate for horse labour), that we have 500,000 cart horses; and as the argument was not adduced to serve the author's proposition, but the reverse, should any error be found, it would be more likely in his favour; that is to say, the number of cart-horses will more probably exceed 500,000 than come within that number. Not only in this point of view is the effect visible, but the extravagant adoption of this animal cuts both ways; for whilst he eats us up, we do not eat him.

"Some will, perhaps say that this argument does not apply, because we are more in want of corn than butcher's meat; but the price of one, influences the price of the other, with very few exceptions: "down horn, down corn," says the proverb. As an article of food, the preference has long been given to the ox rather than the horse, the prejudice being strong in favour of roast beef, and there is every appearance of its continuance. Should the taste of the public vary in this particular, a part of these objections to the cart-horse will lose their effect.

"By reference to a correct statement of the comparative expence between his Majesty's horse teams, as once used, and the Hereford, Devon, and Glamorgan ox-teams, during the year 1797, it appears that, of 65 horses, and of 107 oxen, there is a balance in favour of the latter of 513l. 15s. 6d.; or, on the same comparative average statement of each animal singly, the horse at 20l. 9s. per annum, and the ox 7l. 18s. 6d. per annum, there appears a balance in favour of the ox of 13l. 0s. 6d. not to mention the difference in favour of oxen in the prime cost, and wear and tear of the tackle, if worked in yokes and bows; the casualties and ailments to which horses are more peculiarly liable; the little attendance required by the ox; and the consideration, that if an accident happens to the horse, he is worth no more than his skin; whereas, in this case, an ox in any tolerable working order, is ever worth half his former value.

I have never found his Majesty's oxen otherwise than in good working condition; an instance rarely to be found, except in countries long habituated to their use; not a single horse being employed in so great a concern, the road work and labour must be systematic, often severe; where fifty three-year old steers are every year brought into labour, at the age of four and five working hard, and at the age of six years fatted off; if expence is to be saved in tillage husbandry, it must here be found.

"If any additional information can be derived from the long continued, and, it cannot be denied, successful practice of a private individual, I may add, that, with exception to one team of cart horses, at the rate of one horse to every hundred acres of land, our whole labour is done by four teams, four oxen, or steers, in each; three of which teams, with great ease, work ten acres each team per week, resting two days in it, and would do more when occasion presses §; a rate of labour which must induce those who work horse-teams to give this matter most serious consideration, because it can carry on, with regularity and profit, a very great extent of business; for it must be remembered, that the wheat-sowing of the autumn, the oat and barley sowing of the spring, the turnip fallowing until midsummer, and the harvest, not only do not interfere with each other, but frequently admit of leisure days, which cattle not overworked, seldom fail of turning to excellent account. When they are in labour, they pay; when they lye by, their growth is a certain source of profit.

"As to the question, whether oxen are liable to be lamed as horses; we trust the following is a satisfactory and decisive answer. In the eighteen years I have worked them, I can hardly remember where any one ox has been laid by, from lameness, for forty-eight hours to-

§ The three year-old steers, which are yoked up, when the six-year old oxen are turned off to be grassed, cannot be supposed to work equally with those seasoned to labour; yet, from the scarcity of store-oxen, our labour has been done at this rate, by steers of this age for several seasons.

gether; and if an instance has occurred, it has occurred very rarely: nor do I remember to have lost one single ox or steer in labour, or even had to replace one which failed in work.

"The most common causes of temporary lameness in oxen, are slight strains on stony roads, or a stripping between the hoofs, similar to the foot-rot in sheep, and probably arising from the same cause, namely, the corrosive properties of the strong dews which fall towards autumn. [To be continued.]

Columbian Agricultural Society.

At a Meeting of the Standing Committee of the Columbian Agricultural Society, at Georgetown, on Saturday the 15th of December, A. D. 1810, it was determined that the following Premiums, in Plate with suitable devices, be given at the General Meeting of the Society, to be held on the third Wednesday of May next, viz.

Premium I.—To the value of SIXTY DOLLARS,
For the best two toothed Ram Lamb, of the fine wooled breed.

Premium II.—To the value of SIXTY DOLLARS,
For the best two-toothed Ram Lamb, of the long wooled breed.

Premium III.—To the value of FORTY DOLLARS,
For the second best two toothed Ramb Lamb, of the fine wooled breed.

Premium IV.—To the value of FORTY DOLLARS,
For the second best two toothed Ram Lamb, of the long wooled breed.

Premium V.—To the value of FORTY DOLLARS,
For the greatest number of Lambs, in proportion to the number of Ewes, dropped and raised in one flock of not less than forty Ewes; provided, that the number of Lambs be at least equal to the number of Ewes.

Premium VI.—To the value of THIRTY DOLLARS,
For the best piece of Cotton Cloth, proper for Women's Dresses, not less than ten yards.

Prem. VII.—To the value of THIRTY DOLLARS,
For the best piece of Fancy Patterns for Vests, not less than ten yards.

Prem. VIII.—To the value of THIRTY DOLLARS,
For the best piece of Cotton Cloth, suitable for Pantaloons, or small Clothes, not less than ten yards.

Premium IX.—To the value of TEN DOLLARS,
For the best pair Woollen Stockings, of Cotton or thread, full size.

Premium X.—To the value of THIRTY DOLLARS,
For the best piece of Hempen or Flaxen Sheeting, not less than ten yards.

Premium XI.—To the value of THIRTY DOLLARS,
For the best piece of Hempen or Flaxen Shirting, not less than ten yards.

Prem. XII.—To the value of THIRTY DOLLARS,
For the best piece of Hempen or Flaxen Table Linen, not less than ten yards.

Prem. XIII.—To the value of TWENTY DOLLARS,
For the best piece of Twilled Bagging, of Hemp, Flax or Cotton, not less than ten yards.

Prem. XIV.—To the value of TWENTY DOLLARS,
For the best piece of Bed Ticking, of Hemp, Flax or Cotton, or in part of all or either, not less than ten yards.

Premium XV.—To the value of TEN DOLLARS,
For shearing a Sheep in the neatest, safest and most expeditious manner.

Premium XVI.—To the value of FIVE DOLLARS,
For shearing a Sheep, second best as above.

Reasonable proof will be required of compliance with the 9th and 10th General Rules of the Society, viz.

No person shall be allowed to exhibit any Article for Premium which has not been raised, grown, or made in some County of this District, or of the adjoining States, in which there shall reside at least one Member of this Society, or any Article for which a public Premium shall have previously been given.

No Premium shall be given for any Articles of Manufacture, which have not been either spun or woven in the families from which they may be exhibited, and which have not been both spun and woven in this District or the adjoining States.

It must be observed also, that in conformity to the Instruction of the Society to the Standing Committee, at the General Meeting in May last,

In the first and third Premiums for Sheep, the quality of the wool is the principal object; and in the second and fourth Premiums, the quantity of the wool; but in both cases the judges will take into view every quality which the animals may possess, to render them valuable tups of their respective breeds.

Candidates for the 5th Premium will be required to produce certificates from respectable persons in their neighbourhood, or other satisfactory proof of the number of ewes having lambs in the flock, of the number of Lambs alive on the day of the Exhibition or within a few days thereof, and that no ewes have been taken from the flock since the first Lamb was yeaned, nor any Lambs brought to it from any other flock.

It being the principal object of the Society in regard to Manufactures, to encourage those properly called Domestic, It was *resolved* by the Standing Committee, that professional Manufacturers should not be consider-

ed as entitled to Premium for any article by them exhibited, on account of having bestowed upon them the labour or workmanship peculiar to their art, trade or profession.

It would be desirable that all Premiums be received in Plate; but the value in money will be paid on proper application to the Secretary.

PREMIUMS will be given at the next fall Meeting of the Society for neat Cattle, Woolen Manufactures, &c. for Draught Oxen, to work single or double, and for written Essays on the best mode of geering and working Oxen, founded on actual experiments.

It is also designed to give Premiums at the Spring Meeting in the year 1812,

For the greatest quantity, (not less than 3 tons) of good Hemp, made next summer, by an individual, in some County of this District, or of the adjoining states, in which there is at least one member of the Society, and offered for sale in the District of Columbia; and

For the greatest extent of Live Fencing, planted subseqnent to the first day of January next, and at the time of the meeting, in good thriving condition, promising to be substantial and useful

By order of the Standing Committee.

David Wiley, Sec'ry.

TO CIDER MAKERS.

Joseph Cooper's Receipt for converting Cider into Wine.

Add to a barrel of cider immediately from the press, honey sufficient to make it bear an egg. Work all the filth out of the bung-hole, by keeping the barrel continually full. In about five weeks draw off the pure liquor into a tub, and put the white of eight eggs, well beaten up, with a pint of clean sand, into the tub. Then add a

gallon of cider spirit, and mix the whole well together. And having cleaned the barrel, return the liquor in it, bung it tight, and when fine rack it off into kegs for use. In the opinion of many, the wine is superior to almost any foreign wine; and does not cost 25 cents per gallon, were all the materials procured at the market price.

To this I will add the following receipt:

POME WINE.

Sweet cider from the press, 26 gallons—sugar 52 lbs. cider spirit one gallon—raisins 5 pounds—mix & treat much as above.

As apples and cider are very abundant this fall, and as casks are not sufficiently numerous to receive all the cider the farmers desire to make, it is recommended to them to boil their cider with raisins two thirds away; and to every barrel of boiled cider add sixteen pounds of sugar and one gallon of spirit—and after fermentation, rack; and keep to winter after this. This will make an apple wine.

From the Farmer's Magazine.

OBSERVATIONS RELATIVE TO FLAX.

Sir,

Happening to take up an old news-paper the other day by accident, (the Courier of the 17th October last) I met with the following observation relative to Flax.—As I have just begun to cultivate some (for you must know I am but a very young farmer) and never having met with, in any author, the mode of treatment therein recommended, I should wish much to be informed, thro' the medium of some of your correspondents acquainted with the cultivation and management of flax, how far it would be safe to adopt the mode pointed out, as there are frequently hints on different subjects suggested in this way, more ingenious than practically useful.—Begging your insertion of this when convenient.

I subscribe myself, your very humble servant.

Perthshire, May 1809. C. R

"FLAX.—The exposure of flax or hemp to the frost or snow, materially facilitates the dressing of it, by destroying the glutinous matter, which unites the fibres, and it is now established, that keeping these plants a second winter, will reduce, by one half, the labor which will attend the dressing of them the first year. It is recommended, that, after steeping, the plants be either spread to the action of the frost and air, orplaced in bundles on their ends, and left in that state till the spring: the better they are dried, the less will be the waste in dressing."

From the (Vermont) WASHINGTONIAN.

AMERICAN PORCELAIN.

About 18 years ago two men in the town of Monkton in this state were digging for iron ore, and about four feet from the surface of the ground, came to a white substance, which from its resemblance to white lead they supposed would make putty. They accordingly made trial of it, and found it to answer their best wishes. They afterwards penetrated the bed about 25 feet, and observed the material to grow more pure, the farther they went down. Considerable quantities of putty have since been made and carried abroad for sale and by those who have used it, it is preferred to any other. A house in Vergennes was also painted with it about 16 years since, and still exhibits a hard coat, impervious to the weather. Owing to the narrow circumstances of the then owners, and the doubts and scruples of people about letting a certainty go for an uncertainty, as they called it, this material was rather talked of as valuable than put to the test of experiment, though it was still used in towns in the vicinity of the bed; and it was not till a little more than a year ago, that any adequate ideas were entertained as to the real properties and value of the "*putty stuff*," as it was called. The friends to American manufactures will be pleased to hear, that this so long neglected material is now ascertained to be ARGILLA APYRA or porcelain clay, and that a company is now forming, with a

view of manufacturing it into Crockery and China ware. A very excellent kind of stone ware is already made, by mixing it with a certain proportion of common blue clay.

This clay is found on the eastern side of a hill rising in an angle of about 40 degrees, and is deposited in strata having a variable number of degrees of northern depression, and the strata are intersected by veins of pure flint sand, valuable in the manufactory of flint glass; flint stones are also frequently found. The soil over the bed is generally loose meagre earth, free from ledges; and from the examinations which have been made, the bed may be said to be nearly inexhaustible.

In an analysis of 100 grains, they yielded 56 of pure silex, the remainder were pure clay, a little water, and a very small portion of oxid of iron, though scarce perceptible. When submitted to a stroug heat, it forms into a solid porcelainous mass, without fusion, and retains its whiteness.

It has a very great affinity for oil, and it is found that mixed in equal parts, it even improves the whiteness of whitelead, and adds greatly to its power of resisting the action of the atmosphere. It must of course be a very useful article in painting.

The proprietors are Messrs. Dakin, Musey and Farrar. They have applied to the legislature for an act of incorporation, in favour of which a committee, we understand, has already reported, together with the exclusive privilege of manufacturing for ten years.

☞ It is hoped that FRANKLIN will not forget to continue his Communications.

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THE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

Vol. I.] *Georgetown, Ca. Jan.* 9, 1811. [No. 14.

For the Agricultural Museum.

No. II.

Circumstances have placed within this District, the means, which few of the States possess, of increasing agricultural knowledge, by trying the cultivation of, and diffusing information respecting, newly introduced vegetables, whether objects of horticulture, proper for the food of animals, or articles of commerce. The advantages to be reaped by ourselves, as well as the benefit which our country may receive, from making a judicious use of these means, call upon us to bring them forward. I take the liberty therefore, through you, as editor of the Museum and Secretary to the Agricultural Society, to solicit the attention of that Society, and of the public, to these things, believing it to be only necessary to present them to view, in order to have the proper steps taken to bring them into activity.

Our country has but lately been reclaimed from the wilderness: its inhabitants had long to struggle against the difficulties incident to infant colonization; and, it required all their care, attention and industry, for many years, to produce from the earth articles of first necessity to themselves, or, which were wanted as objects of commerce with other nations, in order to provide those foreign manufactures which the progress of civilization had rendered necessary to domestic comfort. Occupied in the supply of their present wants, and on objects which produced an immediate profit, that foresight which provides for the future was seldom exercised: the exertions of all were to lessen the evils of the day. 27

Industry, and a great increase of our population, have almost surmounted these first difficulties in a new country; we are less dependent than heretofore, and have now leisure to contemplate our growing prosperity, to cultivate those arts which add to the strengh of a nation, as well as to the happiness of the individuals which compose it. The elegancies as well as the arts of civil life are now appreciated, and we begin to feel the necessity of treading back the steps of our ancestors: of planting where they have felled,—of attending to the quality as well as the quantity of our products, in order to gratify an improved taste, and to furnish maintainance to a greater number of persons from the produce of the same lands than heretofore. Raw materials for our own growing manufactures will require the attention of the Agriculturist to other articles than those which heretofore engrossed it; since we have experienced the inconvenience of relying on foreign trade, with nations jealous of our growth and inimical to our prosperity.

Blessed by the Almighty with a country inferior to none in variety of clime, natural productions and fertility of soil, it is only necessary to bring our resources into activity, to furnish all the vegetable productions which administer to the support, the comfort, the luxury, or the commerce of nations; As rich harvests may wave over our soil, our cattle and dairy produce may be as abundant, our meadows and pastures as verdant, and our orchards and vineyards as productive as those of other regions.

The rise and decline of the nations which have preceded ours, should teach us that political liberty is the source of prosperity: that in every age it has been sufficient to transform the barren desert into a fruitful district. What then shall limit our prospects in this new and unexhausted land? When taste and science are led by the hand of liberty, we may reasonably expect to accomplish in a few years, that which has been the slow production of centuries in the eastern Hemisphere.

Establishments for the encouragement of Botanical Enquiry, and Agricultural Experiment, which some of the states, where their utility has been recognised, have expended large sums to procure, and which require more than ordinary patriotism to effect, have in this District been amply provided for by its intelligent founder,—the Father of his Country, within the city which bears his name. He knew the value of Agriculture in the production of virtuous, intelligent and hardy citizens, and appreciated the importance of science, as it is connected with national improvement, national character, and national defence.

To his successors he has left the completion of his schemes for their advantage, and the realization of his ardent desires. A National University,—a Botanic Garden and Agricultural experimental Farm and Nursery, were in his view highly important. The Agricultural Society of this District may be the means of accomplishing his wishes in the latter respect, whilst his enlightened successor in office directs the attention of the Legislature to the completion of the former.

In another paper I shall attempt to shew the advantages which would accrue to the District, and to the Union, from taking this subject into serious and early consideration. FRANKLIN.

The Advantage of working OXEN.

Concluded from page 202.

It is not necessary to accumulate Extracts from British and other European writers on Agriculture, in order to shew the advantages which may be expected to accrue from a more general use of Oxen in husbandry. Writers in our own country have supported the same positions.—Take the following Extract from the 8th Volume of Cary's American Museum, page 24.

"Of the various modes, proposed for the improvement of the present system of agriculture in this country, none

appears to have a higher claim to the attention of our farmers, than the introduction of a more general use of oxen as substitutes for horses in the cultivation of the earth, and the other operations of husbandry.

"Our brethren of the New England states, who have for many years been in the habit of employing these useful animals, have brought the training of them to a degree of perfection unknown to us. There they are used universally in the plough: and long journies are performed by them with equal dispatch, and much less expense than with horses. When young they are accustomed to a quick motion, and are generally bitted, and shod with cloven shoes. The first cost and charges of maintaining horses upon a farm, cannot, upon the most moderate calculation, be computed at less than twice or three times the expense attending a number of oxen sufficient to perform the same labour. Horses are, from their nature, a more precarious property—subject to a greater variety of accidents and diseases; and, when past labour, occasion a heavy loss to the proprietors of them. On the contrary, a well trained ox increases in value until he be nine or ten years old; and the profit from his labour in the mean time, amply repays the farmer every expense incurred in raising and training him to service, and when no longer capable of labour, instead of subjecting his owner to a heavy loss by death, he yields a handsome profit. If therefore an ox, when fatted for beef at ten years old, will produce a sum equal to the expense of maintaining him until that period, it follows, as an obvious truth, that all his labour is a clear profit to the farmer.

"In another point of view, the use of oxen appears highly advantageous. By increasing the number of cattle, a considerable addition will arise to the quantity of manure made on our farms; and what to this country is of the most serious importance, we shall be enabled to increase the quantity of our beef, pork, cheese, butter, candles, and soap for market: for though on the first glance, the truth of this observation may not appear sufficient-

ly striking—yet it must require no force of reasoning to convince a mind but tolerably informed, that the quantity of milk yielded by every additional cow, will enable the farmer to raise an additional hog.

"There is another benefit, of equal importance to any of those I have mentioned, which ought to operate as an inducement to increase the number of our cattle: I mean the promotion of that most invaluable branch of manufactures, tanning. This will afford the farmer a certain demand for his hides, and promote the real interests of the country in the highest degree."

It was intended to have given some account of the different methods of working and geering Oxen, with the results of a variety of experiments which have been made, in order to ascertain in what manner they could be worked with most effect, and with the greatest ease to the animal; but as the subject has attracted the attention of the Columbian Agricultural Society, and they propose to give a Premium at their next Fall Meeting, "*for written essays on the best mode of geering and working Oxen, founded on actual experiments*," it might not be deemed proper to anticipate the competitors. The public will, no doubt, derive more important information from their lucubrations, than from any thing that could at this time be added by

AN OLD FARMER.

Extract from Lord Somerville's Essay on Sheep.

Concluded from page 198.

Too much attention cannot be given to the nature of the soil. Cold soils, more especially those which lie on a wet bottom or sub-soil, I consider to be more adapted to the long-wool breeds of sheep; but they cannot be deemed a safe layer for sheep of any breed whatever, more especially for the short-wool breeds. In propitious seasons, they may not suffer, such as in dry autumns, and summers not too wet and close; but in winter there is great risk, even with the sheep whose long wool and

thick skins present the greatest chance of protection. It is impossible to avoid dwelling on this subject; it is most interesting to the public, for the mischief is suddenly caused, and most extensive when it does occur. There is an instance in the course of last autumn, of a flock of Cheviot wethers, rotted on the rich pastures of the vale of Aylesbury, which were bred on the Carter Fell, perhaps the highest, and certainly the wettest of the Cheviot hills; but thought to be incapable of rotting sheep, wet as it is, because a northern climate forbids a rapid floaty vegetation. Another instance occurred of a flock of South-Down ewes running in a gentleman's park, which died as they dropped their lambs: on being questioned by the author, if these sheep had depastured during last autumn on a part of the park lying beyond a lake of water, (which lake stands somewhat above the level of the land) the proprietor admitted the fact, and at once saw the reason of the calamity. A farmer in the western part of Somersetshire, lost a whole flock of the Bampton ewes, which is a breed of sheep in size and quality of wool, much resembling the new Leicesters, with which they have long ago been crossed, merely by their feeding one night on a wet common adjoining his lands; all of them died as they dropped their lambs.—Whether the disorder was a rot in the liver, or whether it was the red water or dropsy, does not occur to my memory, but the fact is well known.

In hot and rainy summers, I have seen these sheep removed by the owner, and without any delay, from high, but rich upland pastures, into drier land. The caution used in this case, made a strong impression on the author's mind; because this farmer is one of the best judges of sheep any where to be found, and had carried this breed to great perfection; and because this caution was productive of much inconvenience at the time. Few breeds of sheep, in this kingdom, are exposed to such severity of climate and keep, as the Cheviot sheep; the healthy properties also of the South Downs, are too well known to need description. Similar instances, almost

innumerable, could be adduced; but these are sufficient to prove what is required.

It has fallen to the lot of the author, in a greater degree perhaps than any other person, to incur this risk in his own practice, by depasturing both store and fat sheep, of the finest quality of wool, on lands as rich as any in this Island; in a former edition of these essays, he stated the danger which might attend it.

By selecting ewes, neither too old nor too young, and by allowing about ten bushels of bean meal to every hundred ewes, which acts as a cordial to them, he had great luck in lambing; but as the lambs when weaned were sent off to a dry tillage farm, there to be wintered, the danger ceased: in the succeeding month of May, they were sent back able enough to bear the strength of the same keep, which, in the preceding summer, would have destroyed them.

The effect of this strong keep, is not a rot in the liver, but a dropsy, or "red water," as it is termed in some counties.—Lambs reduced by this strong feed, are not to be trusted, in the subsequent autumn, in turnips or even on clovers; nothing but the hardest grasses and dry fodder can restore them.

With a complete conviction of this risk, by the excessive heat of last summer, and the total want of sheep-feed on his tillage farm, which the author had just then taken possession of, he was driven to the alternative of sending his flock of lambs to his marsh land, or to let them starve where they were; for the same heat which destroyed his own keep, burnt up that of his neighbours also. The loss was great, as he never ceased to predict; but it was very much increased by the excessive rains which followed one of the hottest summers ever remembered; and by the great severity of the winter, at the same time, the store-ewes supported themselves uncommonly well, and the lambs dropped this year are in most excellent condition, and numerous beyond any former example, in proportion to the extent of the flock of ewes.

The extent of the loss this season arising from the causes above mentioned, throughout the kingdom, would perhaps exceed all credibility.

Craving pardon for preaching so much on one topic, I do most earnestly beseech sheep-farmers of every rank and degree, to bear in mind, that breeding ewes either very young or very old, cannot endure severity of climate or keep, like those of middle age, and that the shepherd must not spare his labour in the night time, more especially in severe weather, when lambs of the fine wool breeds are first dropped, for their wool is too short to protect them, during the few first days after yeaning, unless they are brought into some sheltered place.

ON THE USE OF SALT FOR SHEEP.

We are not aware, that the practice of giving salt in its raw state, is to be found any where in this kingdom, except on our own estate. We shall, therefore, speak with due caution on the subject, confining ourselves to what has actually been done, and to the effect which, in several years trial, has been most apparent. The heavy duty now imposed on salt, seems to be sufficient to deter others from its use, as it for some time deterred us. At length, we fortunately lost sight of this timidity; our motive was not to produce this of that imaginary effect, but to keep sheep in health. It was reasonable to conjecture, that the flock would demand more salt in the autumn and spring months, when dews are heavy, than in the summer or dead winter months; and so it proves.

In Spain, a thousand sheep use in five months, four arobes, or one quintal of salt, which is 128lb. Their sheep would fat to about 13lb. *per* quarter upon the average; this is the quantity given out, all of which may not be consumed; and as the price of salt in that country is no object, more would have been given, if more was necessary. Without reference to what was allowed in Spain, (for the increased moisture of our climate, and the peculiar properties of our various soils, would not allow such

reference safely to be had,) the quantity given to our sheep was such as we have before stated would keep them healthy, or such as they appeared to demand. It is given in the morning when the sheep are looked over, in order to counteract the ill effect of the dew. They have consumed at the rate of one ton of salt for every thousand sheep annually, which at the rate of 26*s.* *per* hundred, its present§ price, amounts to twenty-six pounds sterling: at the same price the consumption of a thousand sheep might occasionally, but varying according to the season, amount to thirty pounds sterling per annum, and no more.

A small handful is put on a flat stone, or slate, and ten or fifteen of these slates set a few yards apart, are enough for one hundred sheep: at first the sheep may be moved towards them; if they feel a craving for salt, they will lick up quickly as much as is necessary; if they do not want it, what remains dry, when the sheep are next looked at, is taken up and reserved for future use. Twice a week has usually been found sufficient; in particular cases it may be offered thrice. As to any doubt respecting their inclination to it, none can be maintained; for, of a flock approaching towards 1000, there are not ten old sheep which have not taken kindly to it, and not a lamb which does not consume it greedily.

When turnips in the early season are stocked with sheep, and the greens rank and strong, many die suddenly, more especially young two-tooth sheep. The disorder is a pent-up wind, occasioned by excess of fermentation in the stomach; here salted hay and salt are devoured with a greediness, that denotes their salutary effect. The autumn of 1801 was rainy and unfavourable, yet we did not lose one sheep in turnips, and probably never shall, whilst we persevere in the use of salt. In that of 1802, we had many hundred fat wethers, gales, and hog-sheep in turnips, and lost about two during the first month the turnips were stocked; certainly the chances were, that in any keep, and in any season, of such a flock more might have died.

§ price in 1802, 40*s.* per cwt.

In strong pastures likewise, when seasons are wet, the rot often spreads destruction over whole tracts of country; here salt must be beneficial, and an object of national importance. It is supposed, and with great truth, to correct acidity in the stomach, a disorder common to sheep even in Spain, but of a much more serious nature in the damp climate of Great Britain, more particularly when stocked on green floaty food, such as turnips, vetches, and young clover.

It may not be an absolute specific in land naturally unsound; such land it is madness, at any rate, to stock with sheep; but where the rot occasionally prevails, those who have carefully noted how salt affects cattle, can hazard little in supposing, that the disease will be much less heard of, when such a corrective is applied. We must content ourselves rather with a negative than a positive proof, because it is not easy to ascertain how many sheep might have fallen sick, or have died, which are now in health and alive; but it may be put to any flock master, whether he would not consider himself a fortunate man, if at the expence of thirty pounds sterling *per annum*, he could materially improve the health and condition of a flock of 1000 sheep, weighing 14lb. *per* quarter. His probable answer will be, that he would give double the money to secure to himself such an advantage.

When grazing on limestone soils, it is stated in Dillon's account of the Merino sheep, that sheep eat less salt; from whence it occurred to me, that chalk, which, though not so warming in its nature as salt, is fully as good in correcting acidity, might be a most beneficial substitute for it.

Chalk has long been given to fatting calves, for the purpose of correcting this acidity; and why not to sheep, and lambs, who are equally subject to it.

A gentleman, who farms near Tewksbury, in Gloucestershire, says, "You had suggested, that chalk might be substituted for salt, the latter being so expensive in

this country when used upon a large scale ; from the circumstance of sheep eating less salt when depastured in limy or marly soils, I was led to suppose that an economical substitute for pure salt might be made use of ; with this view, I caused 12lb. of chalk to be pounded, sifted, and kneaded in water, saturated with salt. This paste being put in a trough, and dried in the oven, is placed in one of the racks, to prevent the sheep from soiling it ; to this, when in the fold, they have constant access, and I believe, they have received from it every benefit that could be wished ; they lick it constantly, and the lambs shew an uncommon partiality for it."

We are all sensible of the effect of salt on the human body ; we are told how unwholesome, and we know how unpalatable, fresh meat and vegetables are without it. The ancients held it in the highest estimation. "Omnis mensa male ponitur absque sale." We also know the avidity with which animals, in a wild state, seek the salt-pans of Africa and America, and the difficulties they will encounter to reach them ; this cannot arise from accident or caprice, but from a powerful instinct within, which, beyond control, impels them to seek at all risks, that which is salubrious. In Holland, the ancient laws ordained men to be kept on bread alone unmixed with salt, as the severest punishment that could be inflicted in their moist climate : the effect was horrible, these wretched criminals are said to have been devoured with worms, engendered in their own stomachs. In Germany, we are told by Count Rumford, that salt is universally given to oxen and cows in a fatting state, and that their proof is proportionate to the quantity given.

In Sweden, in Saxony, in Silesia, and in France, salt is given to sheep : it is considered a most important article, and is strongly recommended. M. Daubenton says, "Salt gives them appetite and strength ; it warms them and promotes digestion ; prevents obstructions, and dissipates superfluous moisture, the cause of many of their diseases." They want it most, he says, when they are languid, and out of order, which happens in fogs, in hea-

vy rains, and snow. It is well known that hay, mouldy from rain, is rendered palateable and remarkably nutritious to cattle, by simply strewing salt on the stack, at the rate of 10 or 15 pounds *per* ton when making; equally notorious is it, that a sensible effect is hereby produced to the taste; that cattle will prefer it to better hay, well put together, and will demand, when fed on it, without injury to themselves, three times as much water; which circumstance alone accounts for that aptitude to fatten, which is conspicuous in hay so salted. It remained to be proved, how good hay, which had not spent its strength in premature fermentation, would bear such a quantity of salt as would invigorate the stomach, quicken the circulation of the blood, and excite in cattle a desire to drink largely; that it does bear it, and that the effect this hay has upon stock almost surpasses belief, we have ascertained. Some of our hay, lately in use, was of the first quality of sheep hay, the produce of rich and deep loam on a limestone bottom; it was put together without wet, and had 25lb. of salt *per* ton sprinkled through a sieve, a greater quantity than has yet been used. In colour, flavour, and proof, it equalled any hay whatever, and satisfies us that this, or a greater quantity of salt, may be infused into hay of the best of quality, and with the best possible effect.

In confirmation of these facts, we have also the authority of Mr. Darke, of Breedon, one of the most celebrated graziers in the kingdom, who has mixed salt with his flooded mouldy hay, 8lb. of salt only to a ton, and declares that his Hereford oxen did better on it than others on the best hay he had; and that he was and is convinced, that the hay had all its good effect from the salt.

Salt cannot be conveyed into the animal in a more effectual manner, than by sprinkling it on hay through a sieve, when in the act of putting together; for every particle is imbibed in the fermentation, without a possibility of waste. It will, upon trial, no doubt, provo a better breakfast, than those cold dews which prevail in this country, nine months out of the twelve; and which

are more prejudicial to the wool and carcase of those feeble animals, than has been hitherto considered.

We venture no opinion whatever, on the propriety of commuting or abolishing the duty on salt: if it be moderated or abolished so much the better for the farming world; if the duty remain, we shall persist in the use of salt, fortunate that we can obtain so great a benefit at so cheap a rate; and rather than forego its use, we do not scruple to declare, that we would give one hundred pounds *per* annum for every thousand sheep we possess, rather than be debarred its use, even at its present rate; well persuaded that we shall be most essential gainers thereby. It becomes a duty with us to say thus much because an extensive adoption of the use of salt has a two-fold operation; while it benefits the landed interest, it adds also, in a most considerable degree, to the national revenue.

PATENT OFFICE.

Let us turn our view to the Golconda of the United States, *the Patent Office*, where many a gem lies deep in its matrix of cobweb and dust, or piled in regular confusion: where the visitor in vain seeks for a popular exhibition of models, specifications and drawings; though all exist, yet all are lost to the curious visitant. In place of irradiating, as from a common centre, the rays of mechanical science, they lie unheeded, the expensive monuments of a Gothic inattention. The legislature of the United States at their last session, with a liberality truly economical, have at length appropriated funds for the purchase of a building for the reception of those treasures of genius, and a law for the government of the department was brought into congress.

It is hoped that into this law a provision may be introduced, which will make it the duty of the incumbent officer to make up a report on the state of the institution, which might contain a digest of the specifications already lodged in the office, in classical arrangement, under the different heads of mechanic powers, and this report

to be continued annually, by which the progress of this valuable branch of knowledge would be publicly exhibited and diffused. These reports, if executed in a masterly style, would be the most valuable documents ever brought into public view. A sufficiency of copies should be printed annually, to supply every town and village in the United States. But they would without doubt pay a publisher liberally, as it may be presumed they would circulate as extensively as an almanac, and they would furnish us with some means of paying off the literary balance of trade which, to our discredit, is so much against us with Europe. *Aurora.*

ON FINING CIDER.

Cooper's Point, March 10, 1804.

RESPECTED FRIEND,

As you have published my method of fining cider with isinglass [fish glue] *which is a foreign article and expensive*; and as I have, by one of my whimsical experiments, discovered a method new to me, and with a domestic material, generally thrown away as useless, which, on the first trial, has succeeded far better than isinglass ever did with me; and as it is my disposition to wish that any useful discovery, which Providence throws in my way, may be useful to my fellow citizens, I send you an account of it, which you are at liberty to make what use of you please.

Having killed a bullock, and my people having boiled the feet more than common, and let the liquor stand till cold, I perceived it to be thick jelly, resembling dissolved isinglass; and having some cider not fined, I tried the above said jelly, by warming it till dissolved; then drew some of the cider I intended to try with it, and mixed both together gradually in a tub, and kept constantly stirring the mixture till cold; then strained it and put the mixture into two hogsheads of cider, mixing the whole as well as possible, by working it with a stick split in four

parts and put in at the bung-hole. I directed it to be racked off in ten days, which was done; and on my return home, found it as fine as any I ever saw, and greatly improved in flavor.—If you think proper to publish any part of the above, it will be best to do it soon, as cider fines best previous to the trees being in bloom.

JOSEPH COOPER.

LYNN ENTERPRISE.

A correspondent has favored us with a statement of the annual produce of the labors of our industrious, enterprising and persevering neighbors in the town of Lynn. It does honor to our country, and we are particularly pleased in finding so much of the amount to be the effect of the industry of the fair females of that antient town. In the manufacture of women's shoes in Lynn, 1037 persons are employed; they produce annually 987,000 shoes; the materials of which cost about 500,000 dollars; and when, manufactured are worth about 800,000; giving 300,000 as the reward of the labour. Of this sum 49,295dollars annually is the product of the work of females in binding, &c. the shoes.—*Eastern Paper.*

TO MAKE BUTTER IN THE WINTER.

In many parts of our country, the art of making good butter in the winter is very imperfectly understood. Indeed, many good dairy women, suppose it absolutely impracticable to make it at that season. Now, in *some places*, at least in New-England, it is constantly practised, and the process is as familiar, as that of making butter in May or October.—The short history of it is this—

The cows should be stabled and fed on good sweet hay, and if provender is added, so much the better. Instead of keeping the milk in a warm place, it should be put in a cold one, and no matter how soon it freezes. Freezing will separate the cream much more perfectly than it will rise without, and it is taken off with much less trouble

When the cream is churned, the churn should not be put too near the fire. The ordinary warmth of the kitchen will be sufficient. Too much heat will destroy both the complexion, and the flavor of the butter. It will require a little more time in churning than it does in warmer weather; and that is all the real difficulty in making as good butter in January, as can be made at any season of the year. *Maryland Repub.*

MILK.

Among the modern improvements in farming, the dairy has of late years, been very much neglected. So much of the profit of breeders depending upon the facility with which the milk of the cow may be reserved during the suckling time of the calf, the following substitute, used in Germany, for the natural food of the young progeny, may be acceptable to our country readers:

Let as much water be heated on the fire as the calf will be disposed to drink; and when it boils, throw one or two handfuls of oatmeal* into it, and after continuing in that state for one minute, take it off, and let it be cooled to the temperature of new milk, when one or two pints of skimmed milk are to be added to it. With this beverage the young animal will fatten and thrive prodigiously; the milk of the parent will be applied to the dairy, and the intelligent farmer will immediately discover the great advantage to be derived in the produce of the dairy from such an expedient.

* The meal of Indian corn is successfully used for the same purpose, in some parts of the United States.

[*Editor U. States Gaz.*]

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HTE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

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For the Agricultural Museum.

MERINO SHEEP.

The late importations of Merino Sheep having created considerable interest among the farmers of the United States, it may not be amiss for us to enquire into the degree of esteem, in which these animals may be held abroad. The following is the extract of a letter from an American gentleman, of considerable celebrity in the agricultural world, who has lately returned from a visit to England. The letter is addressed to Mr. Custis of Arlington, and bears date 20th December, 1810.

"Notwithstanding the present rage for Merino "Sheep, with *you*, I have my doubts how far the pure "Merino, is the best breed for our country. Even in "England, many of their most eminent Agriculturalists "are not satisfied of the advantage to their country, "of confining their stock to that breed. Dr. Parry of "Bath, has a flock he thinks so far improved, by cross- "sing the Merino with the Ryeland, that he would not "permit a pure Merino ram to be in his flock for one "thousand guineas. Mr. Coke, the best and most exten- "sive Agriculturalist in England, is crossing the Meri- "no with the South Down, greatly to his satisfaction. I "have been for a few years crossing the Merino with "the Bakewell. A young ram sold from my flock the "last year, has shorn eleven and an half pounds. The "only advantage of Merino, is the fineness of wool; "in quantity, staple and carcass, it is inferior to some "other breeds we might propagate to the advantage

" of our country. I wish you to make an experiment
" with a pure Merino ram and some of your best
" Smith's Island Ewes.

" However friendly I am to domestic manufactures,
" I am totally opposed to the mad scheme of forcing
" manufactures by heavy duties, giving rise to great
" manufacturing establishments, supported by wealthy
" individuals, and tending to destroy the physical, mo
" ral and political character of the laborer. The great
" manufacturing towns are sinks of corruption, mise-
" ry and wretchedness; such is the experience of all
" the world, under whatever government."

Note to the above by Mr. Custis.

The importation of Merinos, may prove a real and important benefit to American œconomy if the practice of Dr. Parry, Mr. Coke and other distinguished breeders, is promptly followed in the United States. To preserve the Merino race entire, would be at once unwise, impolitic, and in many respects injurious. We have many useful native breeds, which by crossing with these valued strangers, would imbibe a sufficiency of their superior qualities to answer every necessary and ordinary purpose. At the same time, this system would rescue the native sheep from unmerited neglect, and disperse the Merino strain through all parts of our courntry. Again, cloths made of the pure Merino wool are only suited to the uses of the rich and luxurious. Their costly nature precludes their introduction to the humbler walks of life; and altho' the man of fortune may indulge in the comforts of warm clothing, flannels and night-caps, his poorer neighbor will still be shivering in the horrors of nakedness and neglect.

If manufactures are wanting, they are especially wanting to the needy and distressed—a blanket is more useful than a shawl, a strong cloth more extensively useful, than a fine one To encourage domestic establishments in parishes and townships and to discourage extensive monopolies, should form the essential policy of our

country at this time; when we may become an *exporting* community, it may be desirable to fashion our fabrics to the taste of luxury abroad, but let not the noble attribute of independence, be converted to other than the benevolent uses of the Republic. Minister to the comforts of that large and useful class of our political family, who support the cause of industry in peace, and protect the cause of freedom in war, who deserve the due attention of science and patriotism to supply their real wants, and whose claims to public and private protection are of the most virtuous cast.

The great preference given to imported Sheep, discourages the small farmer from improving his native breeds—He says, that imported Sheep, like imported Horses, are only for the uses of the rich—That the "high mettled racer" will not descend to the walks of agricultural employment, nor will Merino cloth descend to comfort the labourers body.—To introduce a proper admixture of the fine with the coarser wooled Sheep, will tend to equalise the price, and bring it more within the compass of Farmers in general. It were better to see every farmer's *little* territory, spotted with a few sheep than to see the cabannas of a Merino nabob extending far and wide *I too am a Merino man*; but I well know that many beneficial systems of human affairs have their abuses, nor do I believe the Merino system to be exempt. To see the labourer comfortable and his children no longer naked, should form the pious wish of every true friend of humanity, or his country. By intermixing of the valued qualities of Merino sheep with the native breeds at large, the material which forms the heart of manufacture will spread its genial current through the veins and arteries of the Agricultural body, and give life and vigor to the best interests of the nation.

SALT WORKS ON THE KANAWHA RIVER.

I take pleasure in communicating to the public, the improved and improving state of the Salt works on the Kanawha River—The richness of the water, and excess of

acid the Salt contains after evaporation, leave no doubt, that an exuberant source of crystallized salt exists subjacent to the stratum of rock, which constitutes the basis of the river, and probably the mountain on each side of it—I am daily confirmed in the opinion, since every attempt hitherto made to obtain this rich saline water, has been fruitful.—The contiguity of this plenteous source of salt to the Western Countries, so peculiarly adapted to cattle of every denomination, is certainly a remarkable instance of the œconomy of nature making suitable provision where she was apparently unprovided—A steel pointed borer between one and two inches in diameter is employed in piercing the various strata of rock, which compose a depth of between 25 and 30 feet.

When the instrument has perforated the silicious stratum of rock, superincumbent the salt, a strong current of bituminous inflammable air issues from the aperture, termed by an intelligent medical Gentleman, who examined it, sulphurated hydrogen gas, holding phosphorus in solution; generated, as he supposes, from digestion or decomposition of vegetable matter, enveloped by some early convulsion of nature—The proprietors of the salt works introduce a Tin or Copper tube of suitable capacity through the rock in communication with the salt, so as more effectually to exclude the river water. It is raised by pumps and conveyed into boilers, fourteen of which holding each as many gallons, constitute a furnace—Each furnace prepares fifty bushels of clean dry salt a day, which the laborers dispose of at fifty cents per bushel—The Sciota salt water is not above one fourth saturated, and that of Kanawha more than three fourths according to Dr. Smith. The latter is impregnated with some foreign matter, which renders it extremely difficult to manage, and since no pure salt can be obtained, before the water is divested of this unknown mineral, it has been a subject of industrious enquiry among the literati of the western country. Since it possesses none of those properties which characterize Iron, Tin, Copper,

Zinc, &c. some are induced to believe that it is a precious metal dissolved and holden in solution by the superabundant acid, that is drained from the salt after crystallization.—Dr. R. H Smith of Prince Edward county has undertaken to make the analysis, and to send on the result as soon as possible, together with a cheap mode, simplifying the compound; which, if successful, will contribute much to facilitate the manufacture of a chief article of commerce in this quarter.—*Richmond Enquirer.*

HEMP.

Sketch of the manner of cultivating and preparing Hemp in Russia.

The seed is sown between the 20th of May and the end of June, when the weather is warm. Plains are the only grounds suitable for its cultivation. In countries where it seldom rains, moist lands are preferred, but not low meadow. The soil should be free and black, with six or seven inches of mould.—Other ground will not do, especially sandy soils. These will not repay the expence of culture.

Upon a surface of 540 by 420 English feet, the Russians sow five bushels and one tenth of seed.

After once ploughing and harrowing the land, a sufficient quantity of stable manure is spread upon it, and remains upon its surface for six days. The land is then again ploughed, sown and harrowed. The same piece of ground is cultivated every year in the same manner.

Two sorts of hemp grow in every field; the female, which bears the seed, and the male which has the same look with the female, but its head is round and without seed.—When the male hemp begins to ripen, its foliage becomes white (while that of the female remains always green.) Even its stalk takes a greyish cast. The male stalks are all pulled up three weeks before the other, made into sheaves, and left standing against poles four days. They are then opened and spread upon level ground, where they remain until they come to maturi-

ty. The hemp is then separated from the stalk, and produces that quality with which the Russians make coarse cloths. This kind of hemp they do not put under water.

The female hemp is pulled about three weeks after the male, as already observed. When pulled it is bound up in sheaves from five to six inches in diameter. These are placed standing against poles fixed in the ground. Thus they remain at least two days; after which they beat or thresh the sheaves to extract the seed, and beat the roots to clear them of the soil—hemp in this state is called in Russia, Molatchanka, viz. hemp beaten or threshed. In the Ukraine where the best hemp is produced, they used to cut off from the top of the stalk between seven and ten inches, and the same from the root. This they call Sittchka, or cut hemp. Of late years however, the rich proprietors only continue this mode of preparing hemp; which is thus prepared in the other provinces.

Four days after the seed is taken from the stalk, it is put in soak in either still or running water, immaterial which. The sheaves are placed in order by each other, and immersed under water of from seven to twelve feet depth, and confined in a fixed state by pieces of wood and by stones sufficient to secure them. In this situation they remain about three weeks, if the water is warm; if cold, they continue five weeks. At the end of that time a small portion is taken and dried upon an oven, or in some other way. It is then broken by hand. If the hemp separates with ease, then the residue is taken from the water. If it does not separate, it is suffered to remain until it does. When taken from the water it is placed upon heated stones, or ovens to dry. The more dry, the better; because it is then more easily detached from the pulp of the stalk.

Every year great quantities of the sheaves remain until the spring immersed in water, owing to the seve-

ity of the cold. They are then taken and dried in the sun. For this purpose they are placed in an upright posture against walls or fences. The hemp taken out of the water before the frost, is called winter hemp. The first is the strongest; the other much weaker, but the last is more pleasant to the eye, on account of its being a green silver cast. Hemp does not come to maturity under four months. In its first vegetation rains are very favorable to its growth. As it approaches ripeness, dry and warm weather are most propitious to it. When the same year unites these two advantages, it is sure to excel both in quality and quantity.

An essay, on the Ground Nut, as an article from which a palatable and wholesome oil can be extracted. By Mr. A. Boucherie, of Philadelphia, in a communication to Dr. Mitchill, dated June 17, 1809.

However rich are the productions of the American continent, it was painfully acknowledged that there could not be found a fixed oil, sweet to the taste and possessing all the virtues inherent in that of the olive. It is well known that olive oil, one of the substances consecrated to the divinities of former ages, was the delight of the Greeks and Romans. Being anointed with it after bathing, it maintained the suppleness of their skin and of their muscles. Used in cookery it was an agreeable preparation for food. That oil now forms one of the richest productions of the Mediterranean shores, where the olive tree, carefully cultivated, yields an oil more or less agreeable, according to the nature of its soil, and the process used in its extraction.

Chymically considered, that substance essentially distinguishes itself by its unctuousness; it is miscible neither in water nor alcohol. Put in contact with a firey body it soon takes flame, and when well depurated gives a light much superior to that of tallow or wax, and which does not tire the sight. Its constituent principles are carbon about 76, and hydrogen 24 parts in the hundred.

Vainly would it be undertaken to naturalize the olive tree in the United States. It requires, with the saline air of the sea, a milder, more equal and less humid climate. Little hope then would we have of procuring to ourselves so good an oil as that of the olive, if we did not possess a precious fruit which in this country has not yet been considered in this point of view.

I know that the ground nut was a few years since cultivated in France, where they extract from it an excellent and palatable oil. Having found that fruit in the market of Philadelphia, I endeavoured to know if it could be substituted for the olive, and with a true satisifaction I experienced that it answered all my expectations.

The ground nut, which is the Lynchi of the Peruvians, the Mani of the Spaniards, and the Araquidna of the Botanists, grows in Brazil, Surinam, and Peru.—However, it appears not to be a native of those countries, but to have been brought there from Africa by the negroes. It is also found in the West Indies, in North and South Carolina. Undoubtedly it will equally succeed in Virginia, Pennsylvania, New Jersey, the Western States, and in all places where the summer season is constantly warm. If some differences are perceived in those several parts of the union, they result from that which may exist in the intensity and continuance of the heat which prodigiously influence the quantity and quality of the produce.

The plant does not require a fertile soil, it grows in sandy grounds, even in those exhausted. It wants but little labour, the essential part of which consists in operations sufficiently reiterated to prevent the growth of weeds.

The fruit is so well known in the United States as not to require here a description of it. A thin and friable husk unfolds two kernels covered with a pellicle or pericarpium which, as that of the almond, is taken off by immersion in warm water.

From the kernel of the ground nut I have obtained an oil perfectly sweet, as it will be acknowledged on tasting that contained in the bottle which accompanies this memoir. Its qualities render it preferable even to olive oil, which is often harsh to the taste from its aptitude to rancidity; for it is really agreeable but in few quarters of France and Italy. The ground nut, on the contrary seems to possess the oily element in its greatest purity, especially a few days after having been expressed, because some feculencies are then precipitated; but what gives to this oil a decided superiority over that of the olive is, that it does not become rancid. I kept it for a long while exposed to the action of a bright sun, without having its taste the least injured. Should it not have the faculty of combining itself with oxigen, as other oils which are eager of it, and which by that re union experience a kind of combustion? It is very probable it has not, since its taste has not the least been injured.

A light roasting undergone by the risidue after a first expression, yield, by a new expression, a second oil; but this experiences the action of the caloric upon oil.

I have not been in a situation to calculate the produce of an acre of ground sown with ground nuts; but according to what is generally said by botanists, it must be considerable. I only know that the ground nut commonly gives a tenth of its weight in oil; and that very probably an eighth might be obtained if a sufficient force of compression was employed to extricate it.

Hence, it can be easily appreciated what such a culture, followed in a large way, could produce. Certainly it would be one of the richest productions of this continent.

The medicinal properties of the ground nut oil, also deserve to be carefully investigated. Not a doubt remains that it possesses all those generally belonging to the fixed sweet oils, and that it might advantageously be used as a substitute for the oil of sweet almonds, which is demulcent when newly expressed, and afford

ed from fresh almonds; but inflammatory when the least heated by rancidity. The oil of the ground nut will be free of that inconvenience, which is often fatal to sick persons.

So many precious qualities in the ground nut must encourage its cultivation. The southern states alone, now, afford a small quantity of that fruit; and still cultivated but by negroes, who sell it for their own profit. From thence the nuts are brought to every quarter of the continent for consumption—but hurtfully for health; because eaten raw they occasion painful head aches; and roasted, they are extremely inflammatory.

Let proprietors undertake this culture upon a great scale, and it will soon procure them a rich increase. The western states having no spermaceti oil will find in the expression of the ground nut, an agreeable light. Soaps superior to those coming from Europe, will be obtained therefrom, and at so cheap a price, that the soap made of tallow will soon be abandoned. Finally, after having supplied the domestic demand, the ground nut oil exported by our vessels, will obtain a good price in the West Indies, in the north of Europe, and in every clime where the olive tree does not grow.

Undoubtedly, however, it contains a quantity of mucilage, since the kernels of the ground nut triturated with water, form a perfect emulsion, like that known under the improper name of orgeat, and it wants only the arroma of the almond to be as agreeable.

The oil of the ground nut, agitated with alcohol, appears at first in an emulsive state, but shortly after these two substances follow the law of their gravities, the oil sinks, the alcohol rises; but it remains several days in a milky state, which proves that some oil, combined with the mucilage, is suspended in it; both, by time, precipitate themselves under the form of light white flakes. But what deserves to be observed in this experiment, is that the oil so resting in contact with the spirit of wine, becomes absolutely colourless; which

would induce a belief that the last takes off a little resinous part which lightly colours it in its natural state. The action of alcohol upon the ground nut oil is peculiar to it, and does not take place in oils expressed from other seeds.

Pure soda combined with the ground nut oil renders it soapy; whence it results, that well treated with a caustical ley, it would make a soap of superior quality.

The oil, by its fine and pure taste might be advantageously substituted in cookery for that of olive.

The dregs of the ground nut, after the expression by which it yields the oil, make very good food for pigs and turkeys, who are extremely fond of the fruit, which fattens them.

Process for the extraction of the Oil of the Ground Nut.

The ground nut must be separated from the friable husk that enfolds it, and which is very easily done. It appears that it would be enough to thresh it with flails as corn, and to winnow it afterwards. The least pressure between two mill stones, will also be sufficient for the purpose.

The kernel may easily be bruised like paste between two mill stones, the one turning vertically upon another horizontally placed. Linen bags filled with the paste should be submitted to the action of a strong press acting perpendicularly. The wedge mill or Dutch mill might be used with equal success.

On the Analysis of Soils, as connected with their Improvement. By HUMPHREY DAVY, *Esq. F. R. S.*

From the Communications of the Board of Trade.

Utility of Investigations relating to the Analysis of Soils.

The methods of improving lands are immediately connected with the knowledge of the chymical nature of soils, and experiments on their composition appear capable of many useful applications.

The importance of this subject has been already felt by some very able cultivators of science; many useful facts and observations with regard to it have been furnished by Mr. Young; it has been examined by Lord Dundonald, in his treatise on the connexion of Chymistry with Agriculture, and by Mr. Kirwan in his excellent essay on Manures; but the enquiry is still far from being exhausted, and new methods of elucidating it are almost continually offered, in consequence of the rapid progress of chymical discovery.

In the following pages I shall have the honour of laying before the Board, an account of those methods of analysing soils, which appear most precise and simple, and most likely to be useful to the practical farmer; they are founded partly upon the labours of the gentlemen whose names have been just mentioned, and partly upon some later improvements.

II. *Of the Substances found in Soils.*

The substances which are found in soils, are certain mixtures or combinations of some of the primitive earths, animal and vegetable matter in a decomposing state, certain saline compounds, and the oxide of iron. These bodies always retain water, and exist in very different proportions in different lands; and the end of analytical experiments is the detection of their quantities and mode of union.

The *earths* found in common soils, are principally silex, or the earth of flints, alumine, or the pure matter of clay, lime, or calcareous earth, and magnesia.

Silex, or the earth of flints, when perfectly pure, appears in the form of a white powder, which is incombustible, infusible, insoluble in water, and not acted upon by common acids; it is the substance which constitutes the principal part of rock chrystal; it composes a considerable part of hard gravelly soils, of hard sandy soils, and of hard stony lands.

Alumine, or pure clay, in its perfect state, is white like silex; it adheres strongly to the tongue, is incombustible, insoluble in water, but soluble in acids, and in fixed

alkaline menstrua. It abounds most in clayey soils and clayey loams; but even in the smallest particles of these soils it is usually united to silex and oxide of iron.

Lime is the substance well known in its pure state under the name of quick-lime. It always exists in soils in combination, and that principally with fixed air or carbonic acid, when it is called carbonate of lime; a substance which in the most compact form constitutes marble, and in its looser form chalk. Lime, when combined with sulphuric acid (oil of vitriol), produces sulphate of lime (gypsum), and with phosphoric acid, phosphate of lime. The carbonate of lime, mixed with other substances, composes chalky soils and marles, and it is found in soft sandy soils.

Magnesia, when pure, appears as white, and in a lighter powder than any of the other earths; it is soluble in acid, but not in alkaline menstrua; it is rarely found in soils; when it does exist, it is either in combination with carbonic acid, or with silex and alumine.

Animal decomposing Matter exists in very different states, according as the substances from which it is produced, are different; it contains much carbonaceous substance; and may be principally resolved by heat into this substance, volatile alkali, inflammable aeriform products, and carbonic acid; it is principally found in lands that have been lately manured.

Vegetable decomposing Matter is likewise very various in kind, it contains usually more carbonaceous substance than animal matter, and differs from it in the results of its decomposition, principally in not producing volatile alkali; it forms a great proportion of all peats; it abounds in rich mould, and is found in larger or smaller quantities in all lands.

The *saline compounds*, found in soils are very few, and in quantities so small, that they are rarely to be discovered. They are principally muriate of soda (common salt), sulphat of magnesia (Epsom salt), and nitre

ate and sulphate of potash, nitrate of lime, and the mild alkalies.

The *oxide of Iron* is the same with the rust produced by exposing iron to the air and water; it is found in all soils, but is most abundant in yellow and red clays, and in yellow and red siliceous sands.

A more minute account of these different substances would be incompatible with the object of this paper. A full description of their properties and agencies may may be found in the elementary books on chymistry, and particularly in the system of chymistry, by Dr. Thompson (2d edit.), and in Henry's epitome of Chymistry.

III. *Instruments required for the Analysis of Soils.*

The really important instruments required for the analysis of soils are few, and but little expensive. They are a balance capable of containing a quarter of a pound of common soil, and capable of turning, when loaded with a grain; a series of weights from a quarter of a pound Troy to a grain; a wire sieve, sufficiently coarse to admit a pepper corn through its apertures; an Argand's lamp and stand; some glass bottles; Hessian crucibles; porcelain, or queen's-ware evaporating basins; a Wedgewood pestle and mortar; some filters made of half a sheet of blotting-paper, folded so as to contain a pint of liquid, and greased at the edges; a bone knife, and an apparatus for collecting and measuring aeriform fluids.

The chymical substances of re-agents required for separating the constituent parts of the soil, are muriatic acid (spirit of salt), sulphuric acid, pure volatile alkali dissolved in water, solution of prussiate of potash, soap lye, solution of carbonate of ammoniac, of muriate of ammonia, solution of neutral carbonate of potash, and nitrate of ammoniac. An account of the nature of these bodies, and their effects, may be found in the chymical

works already noticed; and the re-agents are sold, together with the instruments mentioned above, by Mr. Knight, Foster-lane, Cheapside, arranged in an appropriate chest. *To be continued.*

The re-agents may be obtained at either of the Apothecary Shops in this town.

To the Editor of the Agricultural Museum.

Sir,

Having lately got into my possession a piece, directing how we may totally destroy the Hessian Fly, which so often affects our crops of wheat, I feel anxious to let others reap the benefit that may arise from the same, therefore wish you (if you think proper) to give it a place in your Museum. It was inclosed in a letter directed to a gentleman in this place from a Mr. Clark living beyond the city of New-York, where, he says, experiments had been made and proved effectual. The piece came in print, and reads thus:——"In order to prove the existence of the Hessian Fly in wheat, take a magnifying glass, and examine the grains, and you will find near the sprout, or chit, from one to six or seven small dark coloured specks, or nits, which it is supposed come to maturity as soon as the wheat begins to grow, and increase with the wheat; and on examining the stalk, by stripping the leaf after it is well up, the insects may be discovered concealed by the joints. They are of a very small, white, round, maggotty appearance; but as they advance to change to the fly state, they become much darker, resembling the colour of flax seed. It is when they are in the maggotty state, they do so much mischief to wheat—as soon as they become dark, they begin to change to the fly state. It is remarkable, that flour made of wheat having this nit or egg in it is dark coloured. In order to destroy the insect, without injuring the wheat for seed, take about one peck of slacked lime—put it to about thirty gallons of boiling water, then stir it well, until it is not quite scalding hot; then put one bushel of wheat into a large sieve or riddle, and pour the water on it, over a tub or other vessel

and immediately throw the wheat on a floor, vat, or tub, and roll it in Plaister of Paris as long as any will stick to it; as soon as the wheat is thus prepared, it is fit to sow, and it will be best to prepare as much in the morning as is intended to be sown in the day.—In addition to the destruction of the insects, wheat thus prepared is found to come up sooner, and grow faster, and will doubly pay the expence and trouble of the preparation. Altho' the above prescription will prevent the destructive effects of the Fly to the Wheat, while growing, yet the insects that may come from other Wheat in the neighbourhood, may impregnate the grain that may be produced from the seed thus prepared; but, by a repetition of the above process, it will be found that, in two or three years, they will be entirely extinct.

I am yours respectfully,

HENRY HAMPTON.

Buckland, Va. Jan. 16, 1811.

TO FARMERS.

Having been informed of the advantages of using the tops of Indian Corn cut as rye straw, to be mixed with potatoes or meal, as a food for horses or cattle, I have been making the experiment during the present year. I find that my cattle thrive better on this fodder, than on rye straw, cut and used in the same manner. The corn stalk certainly contains a quantity of farine substance, and therefore must be highly nutritive. Being cut and scalded with a small quantity of bran, they afford an excellent mess for milch cows. In the common way of foddering cattle with corn tops, the blades are greedily eaten, but the stalks are wasted. By adopting the plan recommended, the whole affords a nutritive food.

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THE
AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

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For the Agricultural Museum.

NUMBER III.

When we consider the advantages which almost every nation has received from the introduction and culture of vegetables, not originally natives of its soil, we can scarcely hesitate for a moment in expressing our belief, that to this source is to be attributed more of our comforts and domestic enjoyments, as well as national wealth, than to any other. The introduction of the potatoe alone into the British dominions, has not only kept them from absolute famine during their present war, but has been the means of rapidly encreasing the population of Ireland, under all the restrictions and oppressions which jealousy could devise, and tyrany impose. The effect which the introduction of this one vegetable has had upon the population of that island, is sufficient to have calmed even Malthus's desponding spirit; it may have seduced him into the sin of matrimony, and eased his conscience as to overstocking the world. The seeds of comfort and support to man, scattered over the whole earth, were by a beneficent Creator intended for the common good of its inhabitants; we are endowed with intelligence to perceive, and industry to collect and propagate them, as the wants and progress of society shall require. Their introduction and culture, by adding to the common stock of useful articles, will be the means of still further enlarging our views of human nature, and our capacities for those enjoyments, which may render the world to our successors more of a Pa-

radise than it is to us, or has been to those who have existed on it in preceding times. As the terms of existence are less severe, and the blessings flowing from peace, industry and the cultivation of our faculties, incomparably greater than what fell to the lot of our more barbarous predecessors; we are morally bound, in our exertions for our descendents, to repay the obligations which we have received from the virtuous exertions of those who have preceded us. Every year of a good man's life will be marked by some act, the advantages of which shall be felt by his posterity. The tree he plants, the spring he opens, the house he builds, are valuable donations to posterity—they prove the utility of his existence, and he may look upon himself as an instrument in the hand of Providence, for diffusing his bounties. If therefore, we can be useful to ourselves whilst here, and benevolent to succeeding generations, let us lose no time in indecision and apathy, for the opportunity soon passes by. It is in society only that great objects can be accomplished; for what is beyond the power of the individual, can be effected with ease by the united exertions of many. So universally is this truth felt, that in every modern nation exist numerous societies, each of which is employed in the pursuit of useful knowledge, in some art, or science, connected with the public weal. To collect facts, to analise or combine them, and diffuse the useful results of that labor, on any important subject, requires the leisure and talents of several individuals. If connected with botany and agriculture, it requires in addition, both pecuniary resources and a considerable lapse of time. Highly important to a nation, as respects its support, its strength and its commerce, it becomes an object of considerable importance to its government, especially when the interest of the government is that of the people. If Agriculture and Botany, claim and receive the national aid and individual patronage in countries full of people, and whose products are known,—is that

aid and that patronage less necessary here, where we possess almost unknown regions, and rely for our commercial prosperity in a great measure upon the productions of the soil. We possess a countless number and variety of forest trees, nutritious roots, fruits, grain, herbs and medicinal vegetables, of the advantages and value of which we are almost entirely ignorant. What can be more laudable, more useful, or more patriotic, than the collection of them into one focus, where they may be submitted to the test of science, and a knowledge obtained of their qualities, their habits, their culture and their value, where plants and seeds can be raised, and distributed over our country. Besides ascertaining the value of our own natural riches, we should receive the useful vegetables of every other region of the globe—the best mode of culture for each would by fair experiment be ascertained, and our farmers, planters, &c could at once enter upon the culture of what appeared useful and profitable, without individually hazarding the expence and delay of experiment. The seeds and plants sent from the botanic garden and agricultural farm and nursery of the society could be depended upon, and those disappointments which so often check the spirit of improvement avoided. Our fruits would soon be all of the most valuable kinds, our garden vegetables good, our staple articles of culture for manufacture, for dying, for medicine or for food, increased in number, and of the best kinds, whilst our dwelling houses would in a few years be embosomed in the most agreeable shades, and surrounded by the most elegant of the flowering trees, with which nature has adorned the earth.

In point of situation for this Institution, the United States possesses none which can be compared to the district of Columbia. In a fine climate, and on a navigable river, which admits the reception of sea vessels of almost any burthen, it can receive from all other parts of the world, their choicest productions—the United States

vessels affording the means of transporting and the United States' agents in foreign countries, of selecting them. The meeting of the national Representatives in the fall of the year, affords an opportunity of receiving thro' their patriotic attention, whatever is rare or useful in our own extensive territory, and on their quitting the Capitol early in the spring, of diffusing over the Union the freshest seeds and best plants of every kind cultivated in the establisment, with a knowledge of the mode of culture to be observed. For this purpose has ample provision of ground been made in the city of Washington. The park as it is called, south of the Tiber creek and at the point formed by it and the Potomak in front of the president's square, contains nearly 30 acres of fine land, which would be sufficient to commence with, and if circumstances required an extension, it adjoins the public appropriation extending from the Capitol, containing upwards of 200 acres more. These could not be more usefully employed to the nation, or more beautifying to the City, besides affording, under proper regulations, pleasant and instructive walks during the summer season.

If the Agricultural Society would take the subject up, and get the sanction of the government, I have no doubt but an annual subscribtion for its establishment and support would be easily obtained.

FRANKLIN.

MICHAUX's HISTORY

OF THE FOREST TREES OF NORTH AMERICA.

MR. F. ANDREW MICHAUX, son of the well known Botanist, who resided many years near Charleston, South Carolina; has published at Paris, during the present year, a few of the first numbers of his "History of the Forest Trees in North America," in reference chiefly to their uses in the arts, and their introduction in commerce, and likewise to the advanta-

ges which they offer to the governments of Europe by cultivating them. The following is an extract from the prospectus of his work.

" We know that North America contains in its vast forests an immense variety of trees; those in the United States alone amount to nearly 150, whilst in Europe, we can scarcely enumerate 40. During my residence in the United States, I sent to the administration of France numerous parcels of seeds; and I spent the greatest part of my time in collecting all the opinions acquired by experience, on the qualities of woods, and their different degrees of utility in the arts. I have been obliged also to take many journeys, to acquire a greater number of facts, in order to procure all the desired information. Beginning with the District of Maine, where the winter is as inclement and as long as in Sweden; I crossed first all the Atlantic states to Georgia, where, for half the year, the heat is as intense as in the West-Indies. I travelled also more than 1556 kilometres, (400 leagues) from the north east to the south-west. I performed in different latitudes, five other journeys, in the interior of the country: the first, to the source of the river Kennebec; the second, from Boston to Lake Champlain; the third, from New-York to the Lakes Erie and Ontario; the fourth, from New-York to the borders of the rivers Monongahela, Alleghany, and Ohio; and the fifth and last, from Charleston in South Carolina to the sources of the rivers Savanah and Oconee. In my first journey, along the coast, I stopped in the principal sea ports, in order to visit the ship-yards, and in general all the shops of workers in wood. I made it a point to consult the most skillful native workmen, and more particularly those from Europe, whom I found capable of judging of the respective qualities of the different woods found in the two continents. I shall make known those of America, which are the object of a considerable commerce between the central, southern, and northern states, and those which are ex-

ported to the West Indies and to Europe, as well as the interior parts of the country, whence they are derived, and the sea ports, from which the different exportations take place. I will also point out the best kinds of trees for fuel, and those the barks of which are used for tanning, and give their comparative prices.

"In travelling from the north to the south, I carefully observed, the place of growth and disappearance, of different species of trees in consequence of a milder temperature, or of a marked change of soil. I gathered in the different states of the Union, all the common names, to annex them to the scientific appellations. I observed the forests, either as they presented a primitive appearance, or as changed by the vicinity of civilized or domestic animals, the influence of which diversifies so rapidly the face of nature. Such are the principal objects, which attracted my attention, and of which I intend to give an account. I will also faithfully point out the species of trees, which I think useful to propagate for the amelioration of the European forests; and those that only deserve to be introduced into parks and gardens, on account of the beauty of their foliage.

"Such is the outline of the researches to which I have devoted myself, and the result of which I have the honor to offer to the public. I thought that the manner in which I have viewed my subject, in directing my observations to a point of general utility, and which had not been done before, would secure my work in Europe and the United States, a more favourable reception than if I had treated it in a scientific point of view.

"The work will be composed of twenty-five numbers. But if, contrary to my expectations, it does not meet with that encouragement, which I hope the importance of the subject entitles it to, and if at any time I am obliged to suspend my publication, I announce to my sub-

scribers, that I have adopted a plan of keeping the genera separate, so that one, two, or three numbers will contain a complete history of one genus of trees, as pines, nut-bearers, maples; so that they will posses so many complete and separate treatises, which will also give the facility of procuring the particular genera which they may desire. One number will be published every month, and be composed of six coloured plates, with descriptions to each. The plates are engraved from drawings by Messrs. Redoute and Bessa, eminent painters in natural history. The best will be in royal octavo, and printed on very fine paper. The price of each number will be 13 francs and 50 centimes, ($ 2. 50.) An edition in English will be published in Philadelphia, accompanied by plates precisely similar to the French edition, with this difference only, that the common names of trees will be given in place of the botanical ones."

The editor is well acquainted with Mr. Michaux; has witnessed his assiduity in collecting information from workmen in Philadelphia, and has no doubt of his work proving eminently useful. The execution of the plates will be in the highest style of elegance. Every college and public school ought to possess a copy of this work, and also of the superb work by the father of Mr. Michaux, on the American oaks, which may be bought for the low price of $ 10. But our seminaries of education unfortunately deem such knowledge degrading, and set a value only on those branches of learning, which are inapplicable to the common purposes of life, or to the business of the world, and which, to nine tenths of those who get a smattering of it, is totally useless, and forgotten after they leave college or school. *Archives of useful Knowledge.*

The Editor of the Agricultural Museum is authorized, in a letter from the Editor of the Archives, to add, that since the publication of the preceding notice, the first

number of the work has arrived, and surpasses expectation. The paper is very fine, and the printing done in a superior manner; but the plates are unequalled by any thing that ever has reached the United States, and probably are not excelled by any work that ever was published, either for accuracy of delineation, or beauty of colouring The first number is confined to the description of ten species of pines, and four of the genus *Abies*, viz. the black (double) spruce, the white (single) spruce, the hemlock spruce, and the silver fir. The description occupies 148 pages royal 8vo. Immediate measures will be taken to publish the work in Philadelphia, in English, and it is hoped it will be generally read. Doct. Mease would have it repeated, that every public school in the United States ought to possess a copy of the work, and also of that of the author's father, on the American oaks. Every gentleman, particularly those in the country, ought to subscribe to this work on the forest trees, that he may acquire a knowledge of their uses, and their scientific apellations, promote the cultivation of a refined taste, and excite a love for the fine arts in the younger part of his family. The plates will also afford the most perfect copies for drawing and colouring that can be found. The price of the French copy is only $6. Had the work been published in London, the price would have been $16.

On the same authority it is announced, that the second volume of the Memoirs of the Agricultural Society of Philadelphia will be out in a few days. It will contain two papers on the slabbers in horses and cattle, from eating second crop grass and hay, particularly of clover. The evil is beginning to be very serious, and it behooves us to find out the cause and the remedy.

The Editor of the Agricural Museum will be thankful to his friends in the country for such information on the subject, as they may possess or be able to obtain, that it may be communicated to the Editor of the Archives, who intends to give a paper on the complaint in his next number.

RICHMOND, JANUARY 24.

The following ARTICLES *constituting the* PLAN *of an* AGRICULTURAL SOCIETY, *were agreed to, a few days past, by a number of Gentlemen assembled at the Swan Tavern.*

CONSIDERING Agriculture as a subject of the deepest interest to this country, and believing that Agricultural Societies, established on proper principles, by affording a stimulus to exertions, and by diffusing information, tend to increase the national stock of knowledge in that most useful science, a number of gentlemen assembled in the city of Richmond, have determined to associate themselves together, and to form a Society for the purpose of promoting Agriculture.

Art. 1. When the number of Subscribers to this Association shall amount to twenty ———, the Society shall be considered as formed, and the Chairman of the Committee appointed to obtain Subscriptions, shall call a meeting for the purpose of electing officers, and of forming such other and additional rules as may be deemed conducive to the objects of this Association. The Society shall be styled, *The Richmond Society for promoting Agriculture.*

2. The Society shall have a President, a Vice President, a Treasurer, and a Secretary, and an assistant Secretary, when the increase of business, shall require it. All of whom shall be annually elected by a majority of the members present at the stated meeting of the Society in January; the persons so elected to continue in office one year; and until others shall be chosen in their stead. In case of vacancy, by death, resignation, or otherwise, the same may be supplied by a new election to be made at any stated meeting of the Society; the person thus newly elected to serve the remainder of the year.

3. A quorum for business shall consist of at least five members, including the President or Vice President, or

the person chosen President pro tempore, according to the provision of the 4th article,

4. At all meetings of the Society, the President shall exercise the usual duties of that office. He shall also have power to call special meetings of the Society by notice published in at least one of the city newspapers. In his absence the same duties shall be performed by the Vice President. If at any meeting both the President and Vice President be absent, the members present, being a quorum to constitute a regular meeting for the business to be transacted, may choose a Vice President for that meeting.

5. The Treasurer shall keep the accounts methodically stated in the books of the Society, and, when required, shall produce them for inspection. At the last meeting of every year, and also whenever his office ends, he shall produce a fair and regular account of all receipts and payments, and deliver it, together with those books and all the property of the Society in his hands, to his successor in office, or to the order of the Society.

6. The Secretary and his assistant shall have in charge all the books and papers of the Society, and keep the same in neat order. They shall also register all letters which shall be written by the Committee of Correspondence, or by themselves by order of the Committee.

7. At the annual meeting of the Society in January, shall be chosen a Committee of Correspondence, to consist of five members, any three of whom to be a quorum, for the purpose of corresponding with any Society or person touching the objects which this Society has in view. The same members shall also be a Committee of Accounts to receive and adjust all claims against the Society, for its contingent expences; and the President shall give order on the Treasury, for the payment of them.

8. The stated meetings of the Society shall be on the first Tuesday of every month.

9. The attention of the Society shall be confined to agriculture and rural affairs.

10. The members of the Society shall be distinguished into *resident* and *honorary* members. Those who reside within shall be considered as resident members, and all others as honorary members, who, as well as the members of all other Agricultural Societies, are hereby invited to assist at our meetings whenever they come to Richmond. Strangers who desire to be present as auditors may be introduced by a resident member.

11. After the Society shall be formed, new members whether resident or honorary, shall be elected by ballot; and the Secretary shall issue notice, to each person of his being elected, to the following purport:

"On the day of 18 A. B. of was elected a member (or honorary member) of the Richmond Society for promoting Agriculture; the Society invite his assistance.

C. D. Secretary."

12. All elections and appointments shall be between eight and nine in the evening, at one of the stated meetings of the Society. And no person shall be elected a member, unless, at a preceding stated meeting, he shall have been openly proposed, and such nomination duly entered on the minutes of the Society. The nomination and election to be in the absence of the candidate.

13. For the purpose of defraying the necessary expences of the Society, each member shall on his admission, and annually afterwards, pay to the Treasurer a contribution of five dollars. This contribution shall be considered as payable on or before the last day of December in every year. And at the first meeting in January in every year, the Treasurer shall lay before the Society a list of the members, specifying who have

and who have not paid their contributions; and any member whose contribution shall be more than one year in arrears, after the same shall become payable as aforesaid, provided payment thereof has been personally demanded by the Treasurer or Collector; shall be considered as withdrawing from the Society, and the same shall be entered on the minutes.

14. New rules, or alterations in the old rules, shall be proposed and entered on the minutes at a preceding stated meeting, and may at a subsequent stated meeting be made with the assent of not less than two thirds of the members present.

15. The funds of the Society, unless for the ordinary contingent expences, shall be disposed of only at a special stated meeting, after a proposition therefor, shall have been made at a previous stated meeting.

16. At the first meeting of the Society, in January, in every year, there shall be a revision of the then subsisting rules, and the same shall stand confirmed, unless revoked or altered by two thirds of the members present.

17. The particular objects of this Society are, to obtain and communicate useful knowledge respecting Agriculture, and to stimulate exertions and inventions in that important science, by all the means which may be in their power, and especially by proposing prizes and premiums when their funds shall enable them so to do.

Richmond Enquirer.

On the Analysis of Soils, as connected with their Improvement. By HUMPHREY DAVY, *Esq. F. R. S.*

From the Communications of the Board of Trade.

Utility of Investigations relating to the Analysis of Soils.

Continued from page 239.

IV. *Method of collecting Soils for Analysis.*

In cases when the general nature of the soil of a field is to be ascertained, specimens of it should be taken from different places, two or three inches below the sur-

face, and examined as to the similarity of their properties It sometimes happens, that upon plains the whole of the upper stratum of the land is of the same kind, and in this case, one analysis will be sufficient; but in vallies, and near the beds of rivers, there are very great differences, and it now and then occurs that one part of a field is calcareous, and another part siliceous; and in this case, and in analogous cases, the portions different from each other should be separately submitted to experiment.

Soils when collected, if they cannot be immediately examined, should be preserved in phials quite filled with them, and closed with ground glass stoppers.

The quantity of soil most convenient for a perfect analysis, is from two to four hundred grains. It should be collected in dry weather, and exposed to the atmosphere till it becomes dry to the touch.

The specific gravity of a soil, or the relation of its weight to that of water, may be ascertained by introducing into a phial, which will contain a known quantity of water, equal volumes of water and of soil, and this may be easily done by pouring in water till it is half full, and then adding the soil till the fluid rises to the mouth; the difference between the weight of the soil and that of the water will give the result. Thus, if the bottle contains four hundred grains of water, and gains two hundred grains when half filled with water and half with soil, the specific gravity of the soil will be 2, that is, it will be twice as heavy as water. and if it gained one hundred and sixty five grains, its specific gravity would be 1825, water being 1000.

It is of importance, that the specific gravity of a soil should be known, as it affords an indication of the quantity of animal and vegetable matter it contains; these substances being always most abundant in the lighter soils.

The other physical properties of soils should likewise be examined before the analysis is made, as they denote, to a certain extent, their composition, and serve as guides in directing the experiments. Thus siliceous soils are generally rough to the touch, and scratch glass when rubbed upon it; aluminous soils adhere strongly to the tongue, and emit a strong earthy smell when breathed upon; and calcareous soils are soft, and much less adhesive than aluminous soils.

V. Mode of ascertaining the Quantity of Water of Absorption in Soils.

Soils, though as dry as they can be made by continued exposure to air, in all cases still contain a considerable quantity of water, which adheres with great obstinacy to the earths and animal and vegetable matter, and can only be driven off from them by a considerable degree of heat. The first process of analysis is, to free the given weight of soil from as much of this water as possible, without in other respects affecting its composition; and this may be done by heating it ten or twelve minutes over an Argand's lamp, in a bason of porcelain, to a temperature equal to 300 † Fahrenheit; and in case a thermometer is not used, the proper degree may be easily ascertained, by keeping a piece of wood in contact with the bottom of the dish; as long as the colour of the wood remains unaltered, the heat is not too high; but when the wood begins to be charred, the process must be stopped. A small quantity of water will perhaps remain in the soil even after this operation, but it always affords useful comparative results; and if a higher temperature were employed, the vegetable or animal matter would undergo decomposition, and in consequence the experiment be wholly unsatisfactory.

The loss of weight in the process should be carefully noted, and when in four hundred grains of soil it reaches as high as 50, the soil may be considered as in the

§ In several experiments, in which this process has been carried on by distillation, I have found the water that came over pure, and no sensible quantity of volatile matter was produced.

greatest degree absorbent, and retentive of water, and will generally be found to contain a large proportion of aluminous earth. When the loss is only from 20 to 10, the land may be considered as only slightly absorbent and retentive, and the siliceous earth as most abundant.

VI. Of the Separation of Stones, Gravel, and vegetable Fibres from Soils.

None of the loose stones, gravel, or large vegetable fibres should be divided from the pure soil till after the water is drawn off; for these bodies are themselves often highly absorbent and retentive, and in consequence influence the fertility of the land. The next process, however, after that of heating, should be their separation, which may be easily accomplished by the sieve, after the soil has been gently bruised in a mortar. The weights of the vegetable fibres or wood, and of the gravel and stones, should be separately noted down, and the nature of the last ascertained; if calcareous, they will effervesce with acids; if siliceous, they will be sufficiently hard to scratch glass; and if of the common aluminous class of stones, they will be soft, easily scratched with a knife, and incapable of effervescing with acids.

VII. Separation of the Sand and Clay, or Loam, from each other.

The greater number of soils, besides gravel and stones, contain larger or smaller proportions of sand of different degrees of fineness; and it is a necessary operation, the next in the process of analysis, to detach them from the parts in a state of more minute division, such as clay, loam, marle, and vegetable and animal matter. This may be effected in a way sufficiently accurate, by agitation of the soil in water. In this case, the coarse sand will generally separate in a minute, and the finer in two or three minutes, whilst the minutely

divided earthy, animal, or vegetable matter will remain in a state of mechanical suspension for a much longer time; so that by pouring the water from the bottom of the vessel, after one, two. or three minutes, the sand will be principally separated from the other substances, which, with the water containing them, must be poured into a filter, and after the water has passed through, collected, dried, and weighed. The sand must likewise be weighed, and their respective quantities noted down. The water of lixiviation must be preserved, as it will be found to contain the saline matter, and the soluble animal or vegetable matters, if any exist in the soil.

VIII. Examination of the Sand.

By the process of washing and filtration, the soil is separated into two portions, the most important of which is generally the finely divided matter. A minute analysis of the sand is seldom or never necessary, and its nature may be detected in the same manner as that of the stones or gravel. It is always either siliceous sand, or calcareous sand, or a mixture of both. If it consist wholly of carbonate of lime, it will be rapidly soluble is muriatic acid, with effervescence; but if it consist partly of this substance and partly of siliceous matter, the respective quantities may be ascertained by weighing the residuum after the action of the acid, which must be applied till the mixture has acquired a sour taste, and has ceased to effervesce. This residuum is the siliceous part: it must be washed, dried and heated strongly in a crucible; the difference between the weight of it and the whole, indicates the proportion of calcareous sand.

[To be continued.

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THE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

Vol. I.] *Georgetown, Ca. Feb.* 20, 1811. [No. 17.

FROM THE AURORA.

Manufacture of Gunpowder.

The improvement in the manufacture of gun powder, in the United States, has exceeded all calculation. Some time since, it was an opinion generally entertained, that the Americans could not prepare gun powder equal to the French or English. This idea appeared more plausible from the circumstance, that so many able and celebrated chymists of Europe, devoted their time and talents in researches of this kind. Experiments after experiments were almost daily instituted, for the purpose of determining the best mode of refining, or preparing the nitre, sulphur, and charcoal.

The Americans have, however, with a zeal becoming the character which they so deservedly bear, improved the several parts of the process—in the purification of the nitre and sulphur— in the carbonization of wood in iron cylinders, and in the proper proportion and mixture of the ingredients. The result of these researches it may with justice be said, has far exceeded our most sanguine expectations. And, indeed, the extent of improvement in this country, of which the arts and manufactures generally are susceptible, is beyond comparison. Are we not called to witness, on numerous occasions, the superiority of American fabrics over those of foreign import?

The salt petre refined at the powder mills of Frankford, under the direction of a celebrated artist, Mr. Munns, when chymically examined, and compared with the best London refined salt petre, far exceeded it in purity. The gun powder prepared from it, projected a ball considerably farther, under the same circumstances,

than the best English, and was equal in all respects, to the French This fact I know to be true. The gun powder manufactured by Mr. Dupont will also have this effect.

From the knowledge I possess of the process of refining salt petre, and of the directions uniformly given by chymical writers, I am convinced, that the mode employed at the Frankford mills,* in several important parts, is entirely different from that generally made use of.

In considering so useful a branch of manufacture as that of gun powder, a circumstance is worthy of remark, *namely*, the mode of obtaining nitre from our own resources.

This object, we are well assured, was the primary consideration of the congress of '76; and the numerous essays and pamphlets, which were published at that time, were of immense service to the country in detailing the different modes of preparing nitre. To no one can these reflections be more obvious, than to the gun powder manufacturer; and to no one can they be more really serviceable. Did not the French, according to accounts, when this article was extremely scarce, invent every method to obtain it in their country? and did they not succeed? They had no nitre pits; of which our western country abounds; but they had refuse vegetable and animal matter, and a number of other substances, which, when properly treated, afforded salt petre in abundance. We are, however, better situated. From what we learn relative to the nitre pits of the western country, and particularly from the remarks of Dr. Brown, we are assured, that the quantity of nitre which could be manufactured, would supply ALL the exigencies of our country Though it may be truly said, that the spirit of '76 led the genius of Columbia to the cellars, barn yard, and earthen floors of tobacco houses, for a supply of this article, yet, in our day, the caves or caverns of the western country will render this extent of research unnecessary.

With respect to sulphur. Immense quantities of this article are found in a variety of situations either native or combined. But the operation of the chymist, will sever the iron chain of nature, and present it to the manufacturer in a pure state, for the purpose of his art.

Charcoal, indeed, though easily prepared for common purposes, requires a peculiar art or skill in its preparation, for the manufacture of powder. The willow, the Linden, and several other woods have been used for preparing the coal; but the first kind appears to afford a coal possessing all the desirable properties. Much, however, depends on the manipulation; and no mode is so well adapted as that of employing iron cylinders cast for the purpose.

Some useful improvements made in the *grinding*, *mixing*, and finally the *granulation*, tend amazingly to an object so desirable in gun powder. Some extensive improvements, or rather additions, on a very enlarged scale, are now preparing at the works at Frankford.

PYRO.

THE PEACH TREE.

The Peach is the most delicious fruit that can be produced in any country. Fluxes are sometimes ascribed to the use of it, but this is only where it is imprudently taken before it is ripe; for it is a well known fact, that in fluxes there is nothing so desirable to the sick person as a fully ripe peach; and few prescriptions are more beneficial in every stage of that disorder, than a ripe free stone sweet peach.

The tree of this fruit may be produced in great varieties from the stone, but the best kinds are those propagated by inoculation. This precious fruit, however, is forbidden to the slothful, the negligent, and the ignorant; for it can neither be obtained, nor preserved, but by skill and attention.

The Peach Tree is liable to three casualties, or misfortunes. The fly, which deposits its eggs near the root of

the tree; the bursting of the bark by severe frost in winter; or by the splintering off of the limbs at the forks of the tree. The gardener who wishes to have well tasted, wholesome fruit, must carefully guard against these casualties.

The early free stone is one of the finest peaches; comes most certainly to its kind from the stone. In 100 acres of this kind, there will scarcely be one sour peach.

Those who can obtain the Apricot stone will find it very advantageous to plant for stocks to inoculate upon; for although they are not absolutely free from the ravages of the fly, yet they are less frequently attacked than the peach tree. Experiments have proved, that a peach inoculated on the apricot, will grow larger and rise higher than on the peach stock.

The usefulness of good peaches, which the health of ourselves and our children enjoins us to provide, and which a kind providence has put within our reach, should urge us to our duty in taking the proper means to provide them. It has been said by a gentleman who has had the experience of three score years, "that a free use of really ripe good peaches, would add seven years to the life of every man in the state."

A MARYLAND FARMER.

From the Archives of Useful Knowledge.

On the Encouragement given to the Manufactory of Fine Cloth, by the Legislature of New-York, in a letter from R. R. Livingston, Esq.

Clermont, August 5, 1809.

SIR,

I have received your favor of the 20th July, and am much gratified to learn that the efforts of your Society for the improvement of cattle are likely to be attended with success. This state affords some very fine descendants of Bakewell's stock, and we are beginning to give attention to their extension, particularly in the western part of it, where the pastures are very fine. I

think with you, that the cattle of Europe do not degenerate here, except by neglect and not preserving the races pure—both of these evils will be remedied by the emulation which your Society will excite I am much pleased that you have found the samples of wool§ worthy the attention of the Cattle Society. I am persuaded that its quality has improved under my care, though the original stock was of the finest that could be procured in Europe. The women, who are now spinning some of it, and who spun the fleeces of my full bred sheep last year, declare that it is finer and better than it was; it certainly is more abundant. I am not surprised that your Merino wool has not yet found its price. When the supply is small and irregular, the manufacturers do not prepare the machinery necessary for its manipulation, and private families not being in the habit of working it, do not know how to wash or card it. The same process that is used for common wool, runs it into knots and spoils it entirely. The first fleeces I sold was in 1806, for till I returned from France in 1805, the sheep I sent over three years before, were neglected, and did not increase; it then fetched only one dollar for the full bred, and sixty cents for the rest of the flock, consisting of 3-4 and 1-2 bred sheep, and even then I gave a year's credit. There was then no carding mill at which it could be carded. My flock and their descendants have produced two mills with fine cards, and a third is now erecting, and my instructions have enabled private families to wash and card it with cotton cards, and in consequence of this, the wool has reached the prices I have mentioned, and instead of a year's credit to the manufacturers, they pay one half of the price down, and the residue in eight months. When as a matter of favour, I have spared small quantities to private families, as twenty or thirty pounds, they pay down the price, and some have

§ Mr. L. had sent to the Editor, two samples of his full-blooded Merino ram's wool, which were exhibited at the Cattle show, in July last.

even advanced the money to my overseer three months, before the sheep were shorn, in order to secure a preference.

It may be useful to mention to you one great cause of the anxiety to have fine wool, which is now diffusing throughout this state. Our legislature have, very wisely, given a bounty of eighty dollars for the best specimens of woolen cloth, not less than thirty yards narrow cloth, wove in private families, and a higher bounty for two hundred yards made by professed manufacturers. The candidates in each county exhibit their cloth to the county court at their autumn sessions. The person to whom the prize is adjudged, has an order upon the county treasurer for the amount. The judges transmit a half of a yard of the cloth, with their certificate of the breadth and length of the piece, to the Society for useful arts, who determine which of the specimens sent them are the first, second and third best of the private claimants, and which the first and second best of those exhibited by professed manufacturers: the first in each line receives from the state treasury a piece of plate of the value of one hundred and sixty dollars, the second of one hundred dollars, and the third of eighty dollars, in addition to the county bounty. The last year, the first prize for domestic manufactured cloth was adjudged to that made from my 3-4 bred wool—that of the first quality was manufactured for my own use, and not exhibited for the prize, not having the necessary breadth. The first manufacturer's prize was taken by one to whom I sold my half bred wool, and all the state prizes have been, I believe, adjudged to cloth made from half bred Merino fleeces. This has opened the eyes of the public to this object, and excited so great an emulation among the farmers, that many are anxious to procure the wool, and I do not doubt, that at least one hundred pieces of cloth will be offered for the premiums this year.

I have had it very much at heart to render this breed of sheep common, and have accordingly published in the

newspapers, in a plain stile, several little essays on the subject, which have had all the effect I promised myself from them in this state, and the western parts of Massachusetts, beyond which they did not reach. Having (as I believe) been the first to introduce the Merino full bred into the United States, (mine having been sent from France in the spring of 1802, about three or four months before those of col. Humphrey's were sent from Spain) I feel a great interest in seeing my fellow citizens avail themselves of the advantages they present, and the rather, as they are a more hardy and thrifty race than our own, as is acknowledged by every person who sees my mixed flock of common and Merino sheep feeding together, either on dry food or on grass. If, therefore, you conceive that any thing I have communicated may contribute to this desirable end, you are perfectly at liberty to use it as you think proper. I am sorry that it is not in my power to furnish the gentleman you mention with a full bred ewe, as my whole stock of the full bred ewes at present is only twenty, and I have it in contemplation to extend my flock to about 1000 sheep. At present, including lambs, it does not amount to four hundred of the full and mixed breeds; but I am now in such a train that I shall advance very rapidly.*****

I am, sir, with esteem,
Your most obdt. humb. serv't.

ROBT. R. LIVINGSTON.

JAMES MEASE, M. D.

Remarks by the Editor of the Archives

The foregoing letter is published in the hope that the wise example exhibited by the state of New York, will be followed by every state in the Union, and especially by our own, the soils and climates of which, as has been amply proved, are admirably calculated for raising sheep, and the improvement of wool. It cannot be denied, that whatever may be the aggregate amount of individual or domestic labor, in that or other articles in our state, (and it is certainly great) Pennsylvania is

far behind New-York, Massachusetts or Connecticut, in the spirit for the propagation of Merino sheep, or for manufacturing cloths; not one complete establishment to any extent, existing in the whole state. Hitherto indeed so far from encouragement being given to improvers of wool, there has been a total indifference thereto by our legislature, which although composed of more than three fourths farmers, declined until lately to do any thing on the subject; even to afford negative aid, by a trifling tax on those worthless animals about a farm—Dogs: the whole proceeds of which, even now, in the township, in Delaware county, in which the writer's farm is situated, would not amount to a sum, equal to what he thinks some of his half blooded Merinos are fairly worth. What remuneration might be expected, if a full blooded ram, or even one of the fourth cross, were sacrificed by a cur or hound? It is to be hoped that the hint will be taken, and that every possible encouragement to the increase of our flocks, and to the extension of woollen manufactures will be afforded without delay. A small portion of the wealth of the people, cannot be distributed by their representatives, to greater profit for those from whom it is collected, than by stimulating them by premiums, to attend to an object so important as that under consideration, and by aiding and fostering the endeavors of those who have turned the public attention to this great source of Agricultural riches, and public prosperity.

On the Analysis of Soils, as connected with their Improvement. By HUMPHREY DAVY, *Esq. F. R. S.*

From the Communications of the Board of Trade.

Continued from page 264.

IX. *Examination of the finely divided Matter of Soils, and Mode of detecting mild Lime and Magnesia.*

The finely divided matter of the soil is usually very compound in its nature; it sometimes contains all the four primitive earths of soils, as well as animal and

vegetable matter; and to ascertain the proportions of these with tolerable accuracy, is the most difficult part of the subject.

The first process to be performed, in this part of the analysis, is the exposure of the fine matter of the soil to the action of the muriatic acid. This substance should be poured upon the earthy matter in an evaporating basin, in a quantity equal to twice the weight of the earthy matter; but diluted with double its volume of water. The mixture should be often stirred, and suffered to remain for an hour or an hour and a half before it is examined.

If any carbonate of lime or of magnesia exist in the soil, they will have been dissolved in this time by the acid, which sometimes takes up likewise a little oxide of iron; but very seldom any alumine.

The fluid should be passed through a filter; the solid matter collected, washed with rain water, dried at a moderate heat, and weighed. Its loss will denote the quantity of solid matter taken up. The washings must be added to the solution, which if not sour to the taste, must be made so by the addition of fresh acid, when a little solution of common prussiate of potash must be mixed with the whole. If a blue precipitate occurs, it denotes the presence of oxide of iron, and the solution of the prusiate must be dropped in till no farther effect is produced. To ascertain its quantity, it must be collected in the same manner as other solid precipitates, and heated red; the result is oxide of iron.

Into the fluid freed from oxide of iron, a solution of neutralized carbonate of potash must be poured till all effervescence ceases in it, and till its taste and smell indicate a considerable excess of alkaline salt.

The precipitate that falls down is carbonate of lime; it must be collected on the filter, and dried at a heat below that of redness.

The remaining fluid must be boiled for a quarter of an hour, when the magnesia, if any exist, will be precipitated from it combined with carbonic acid, and its quantity to be ascertained in the same manner as that of the carbonate of lime.

If any minute proportion of alumine should, from peculiar circumstances, be dissolved by the acid, it will be found in the precipitate with the carbonate of lime, and it may be separated from it by boiling for a few minutes with soap lye, sufficient to cover the solid matter. This substance dissolves alumine without acting upon carbonate of lime.

Should the finely divided soil be sufficiently calcareous to effervesce very strongly with acids, a very simple method may be adopted for ascertaining the quantity of carbonate of lime, and one sufficiently accurate in all common cases.

Carbonate of lime, in all its states, contains a determinate proportion of carbonic acid, *i. e.* about 45 per cent. so that when the quantity of this elastic fluid, given out by any soil during the solution of its calcareous matter in an acid, is known, either in weight or measure, the quantity of carbonate of lime may be easily discovered.

When the process by diminution of weight is employed, two parts of the acid and one part of the matter of the soil must be weighed in two separate bottles, and very slowly mixed together till the effervescence ceases; the difference between their weight before and after the experiment, denotes the quantity of carbonic acid lost; for every four grains and a half of which, ten grains of carbonate of lime must be estimated.

The best method of collecting the carbonic acid, so as to discover its volume, is by pneumatic apparatus. The estimation is, for every ounce measure of carbonic acid, two grains of carbonate of lime.

X. Mode of ascertaining the Quantity of insoluble finely divided animal and vegetable Matter.

After the fine matter of the soil has been acted upon by muriatic acid, the next process is to ascertain the quantity of finely divided insoluble animal and vegetable matter that it contains.

This may be done with sufficient precision, by heating it to strong ignition in a crucible over a common fire, till no blackness remains in the mass. It should be often stirred with a metallic wire, so as to expose new surfaces continually to the air; the loss of weight that it undergoes denotes the quantity of the substance that it contains destructible by fire and air.

It is not possible to ascertain whether this substance is wholly animal or vegetable matter, or a mixture of both. When the smell emitted during the incineration is similar to that of burnt feathers, it is a certain indication of some animal matter; and a copious blue flame at the time of ignition, almost always denotes a considerable portion of vegetable matter. In cases when the experiment is needed to be very quickly performed, the destruction of the decomposible substances may be assisted by the agency of nitrate of ammoniac, which at the time of ignition may be thrown gradually upon the heated mass in the quantity of twenty grains for every hundred of residual soil. It affords the principle necessary to the combustion of the animal and vegetable matter, which it causes to be converted into elastic fluids; and it is itself at the same time decomposed and lost.

XI. Mode of separating aluminous and silicious Matter and Oxide of Iron.

The substances remaining after the decomposition of the vegetable and animal matter, are generally minute particles of earthy matter, containing usually alumine and silex with combined oxide of iron.

To separate these from each other, the solid matter should be boiled for two or three hours with sulphuric acid diluted with four times its weight of water; the quantity of the acid should be regulated by the quantity of solid residuum to be acted on, allowing for every hundred grains two drachms or one hundred and twenty grains of acid.

The substance remaining after the action of the acid, may be considered as silicious; and it must be separated and its weight ascertained, after washing and drying in the usual manner.

The alumine and the oxide of iron, if any exist, are both dissolved by the sulphuric acid; they may be separated by carbonate of ammoniac, added to excess; it throws down the alumine, and leaves the oxide of iron in solution, and this substance may be separated from the liquid by boiling.

Should any magnesia and lime have escaped solution in the muriatic acid, they will be found in the sulphuric acid; this, however, is scarcely ever the case; but the process for detecting them and ascertaining their quantities, is the same in both instances.

The method of analysis by sulphuric acid, is sufficiently precise for all usual experiments; but if very great accuracy be an object, dry carbonate of potash must be employed as the agent, and the residuum of the incineration must be heated red for a half hour, with four times its weight of this substance, in a crucible of silver, or of well baked porcelain. The mass obtained must be dissolved in the muriatic acid, and the solution evaporated till it is nearly solid; distilled water must then be added, by which the oxide of iron and all the earths, except silex, will be dissolved in combination as muriates. The silex, after the usual process of lixiviation, must be heated red; the other substances may be separated in the same manner as from the muriatic and sulphuric solutions.

This process is the one usually employed by chymical philosophers for the analysis of stones.

XII. Mode of discovering soluble animal and vegetable Matter and saline Matter.

If any saline matter, or soluble vegetable or animal matter, is suspected in the soil, it will be found in the water of lixiviation used for separating the sand.

This water must be evaporated to dryness in an appropriate dish, at a heat below its boiling point.

If the solid matter obtained is of a brown colour and inflammable, it may be considered as partly vegetable extract. If its smell, when exposed to heat, be strong and fetid, it contains animal mucilaginous or gelatinous substance; if it be white and transparent, it may be considered as principally saline matter. Nitrate of potash (nitre) or nitrate of lime, is indicated in this saline matter by its scintillating with a burning coal. Sulphate of magnesia may be detected by its bitter taste; and sulphate of potash produces no alteration in solution of carbonate of ammoniac, but precipitates solution of muriate of barytes. [*To be continued.*

For the Agricultural Museum.

REMARKS, *on the advantage of working oxen in preference to horses.*

From being in the habit, for a number of years, of working oxen, I hope to be able to give to my fellow citizens satisfactory proof of the many advantages which the Farmer may derive from adopting the use of these valuable animals. I am aware of the difficulty of overcoming deeply rooting prejudices and long fixed habits. The horse is a fine, tractable animal, and easily applicable to many valuable purposes. Nevertheless, when we take into view his first cost, either at purchase, or at

common expence in raising, and add to that the annual expence of keeping him in suitable order for labour, together with his liability to disease and other casualties, and in these respects, place him in competition with the ox, we shall find a result greatly to his disadvantage.

For example; on a farm of moderate size, four draught horses will be annually employed which cost on an average, $75 each. - $ 300.00

Geering for four horses at 5.50 - 22.00

Annual consumption of grain for 4 horses at the rate of 3 pecks per day, or 273 bushels per annum, which taken at the average of grain in the counties contiguous to the coast, or tide waters is worth 50 cents per bushel. - 136.50

Add two and a half per cent for casualties which is equal to about - - - - 11.25

$ 469.75

Deduct for advantage of riding horses occasionally &c. at 5 per cent. - - - 22 50

And the cost for one year of four plantation horses at a moderate calculation is. - $ 447.25

For a trial I would propose six good oxen to do equal work with 4 horses, the oxen to cost on an average, $ 35 each - - - $ 210.00

Geering or yoking at $ 1.50 each. - 9.00

From experience I have found that steers may be kept in good working order with but little grain, and that the whole of their keeping would cost but little more than the hay that a horse will consume over and above the grain above stated; nevertheless we will allow him to consume five bushels per annum, which for six oxen will be 30 bushels at 50 cents. - 15 00

$ 234.00

Which deduct from the amount of one years expence for four horses - - 447.25

And there will remain in favor of the oxen a balance of - - - $ 213.25

But to make a full and fair comparison, it must be continued for at least five years.

The first cost of four horses, will be as above		$ 300.00
Geering, at $ 5.50 each.		22.00
Grain, exclusive of hay, for five years at $ 136.50 per annum.		682.50
Add for casualties at $ 11.25 per annum.		56.25
		$ 1060.75
From which deduct, for the advantage of riding at $ 22.50 per annum for five years.	$ 112.50	
For four old horses sold at the end of five years for about $ 25 each.	100.00	
		212.50
And we have the amount of expence for four horses for five years.		$ 848.25
On the contrary, six oxen at $ 35 each.		$ 210.00
Geering at 1 5 0 each.		9.00
Grain at $ 15. each.		75.00
		$ 294.00
From which deduct the price of six old oxen, sold at the end of five years at $ 25. each.		150.00
And there will remain the cost of 5 years labour of six oxen.		$ 144.00
And that of five years labor of four horses is		848.25
Leaving in favor of the oxen a balance of.		$ 704.25

A saving on a farm, in the one article of a team, in the space of five years, of more than $700, is certainly worth our attention. It would lay in a fine stock of oxen, and discharge some of the old store debts. Let us consider our situation, fellow citizens. our forests cleared our soil exhausted, our old fields whitened w th short grass, the effect of poverty. Is it not a subject worth our consideration how to extricate ourselves. Perhaps, one of the first steps to remove this evil, is to retrench our expences.

Let us try it in the article above stated—most of the counties below the stage road in Maryland use oxen. In opposition to the use of them on farms more remote from market, some may alledge that they are not calculated to travel a long journey with the products of the country. Experience has at many times, and in many places proved the contrary to be the fact. In most or all of the eastern states, oxen draw nearly all the produce of the country to market; and in many instances a greater distance than any farmer in Maryland may ever have occasion to send his. In New England, Jersey, Pennsylvania and Delaware, oxen do a great portion of the ploughing and from habit have become equally as docile as our horses. Some here may alledge that we have them not, nor can we raise them; no, neither shall we ever be able, while we keep our fields so clear of grass by the continual culture of Indian corn, an article so necessary to the support of so many farm horses. The people in this state, are not well aware of thier exceeding bad economy, until they travel out of it, where they have an opportunity of observing the much better management of others; I should advise every young farmer, as soon as his crop is housed, to take a ride to the eastward, and on his return to purchase a good yoke of oxen. Try all things, fellow citizens, and hold fast that which may be found to be best.

Your friend,

CORN PLANTER THE YOUNGER.

P. S. Nothing has been taken into account for shoeing horses; but oxen may also be shod, especially on long journeys, as is common east of us.

PRINTED FOR AND PUBLISHED BY DAVID WILEY.

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To be paid in advance.

THE
AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

Vol. I.] *Georgetown, Ca. March 6.* [No. 18.]

On the Analysis of Soils, as connected with their Improvement. By HUMPHREY DAVY *Esq. F. R. S.*

From the Communications of the Board of Trade.

Concluded from page 269.

XIII. MODE OF DETECTING SULPHATE OF LIME (GYPSUM) AND PHOSPHATE OF LIME, IN SOILS.

Should sulphate or phosphate of lime be suspected in the entire soil, the detection of them requires a particular process upon it. A given weight of it, for instance four hundred grains, must be heated red for half an hour in a crucible, mixed with one-third of powdered charcoal. The mixture must be boiled for a quarter of an hour, in a half pint of water, and the fluid collected through the filter, and exposed for some days to the atmosphere in an open vessel. If any soluble quantity of sulphate of lime (gypsum) existed in the soil, a white precipitate will gradually form in the fluid, and the weight of it will indicate the proportion.

Phosphate of lime, if any exist, may be separated from the soil after the process for gypsum. Muriatic acid must be digested upon the soil, in quantity more than sufficient to saturate the soluble earths; the solution must be evaporated, and water poured upon the solid matter. This fluid will dissolve the compounds of earths with the muriatic acid, and leave the phosphate of lime untouched.

It would not fall within the limits assigned to this paper to detail any processes for the detection of substances which may be accidentally mixed with the matters of soils. Manganese is now and then found in them, and compounds of barytic earth; but these bodies appear

to bear little relation to fertility or barrenness, and the search for them would make the analysis much more complicated without rendering it more useful.

XIV. Statement of Results and Products.

When the examination of a soil is completed, the products should be classed, and their quantities added together, and if they nearly equal the original quantity of soil, the analysis may be considered as accurate. It must, however, be noticed, that when phosphate or sulphate of lime are discovered by the independent process XIII. a correction must be made for the general process, by subtracting a sum equal to their weight from the quantity of carbonate of lime, obtained by precipitation from the muriatic acid.

In arranging the products, the form should be in the order of the exepriments by which they were obtained.

Thus 400 grains of a good silicious sandy soil may be supposed to contain.

		Grains.
Of water of absorption		18
Of loose stones and gravel principally silicious		42
Of undecompounded vegetable fibres		10
Of fine silicous sand		200
		270
Of minutely divided matter separated by filtration, and consisting of		
Carbonate of lime	25	
Carbonate of Magnesia	4	
Matter destructible by heat, principally vegetable	10	
Silex	40	
Alumine	32	
Oxyde of iron	4	
Soluble matter, principally sulphate of potash and vegetable extract	5	
Gypsum	3	
Phosphate of lime	2	125
Amount of all the products		395
Loss		5

in this instance the loss is supposed small; but in general, in actual experiments, it will be found much greater, in consequence of the difficulty of collecting the whole quantities of the different precipitates; and when it is within thirty for four hundred grains, there is no reason to suspect any want of due precision in the processes.

XV. This general Method of Analysis may in many Cases be much simplified.

When the experimenter is become acquainted with the use of the different instruments, the properties of the re-agents, and the relations between the external and chymical qualities of soils, he will seldom find it necessary to perfom, in any one case, all the processes that have been described. When his soil, for instance, contains no notable proportion of calcareous matter, the action of the muriatic acid IX. may be omitted. In examining peat soils, he will principally have to attend to the operation by fire and air X.; and, in the analysis of chalks and loams, he will often be able to omit the experiment by sulphuric acid XI.

In the first trials that are made by persons unacquainted with chymistry, they must not expect much precision of result. Many difficulties will be met with; but in overcoming them, the most useful kind of practical knowledge will be obtained; and nothing is so instructive in experimental science, as the detection of mistakes. The correct analyst ought to be well grounded in chymical general information; but perhaps there is no better mode of gaining it than that of attempting original investigations. In pursuing his experiments, he will be continually obliged to learn from books, the history of the substances he is employing or acting upon; and his theoretical ideas will be more valuable in being connected with practical operation, and acquired for the purpose of discovery.

XVI. On the Improvement of Soils, as connected with the Principle of their Composition.

In cases when a barren soil is examined with a view to its improvement, it ought in all cases if possible, to be compared with an extremely fertile soil in the same neighborhood, and in a similar situation; the difference given by their analyses would indicate the methods of cultivation; and thus the plan of improvement would be founded upon accurate scientific principles.

If the fertile soil contained a large quantity of sand, in proportion to the barren soil, the process of amelioration would depend simply upon a supply of this substance; and the method would be equally simple with regard to soils deficient in clay or calcareous matter.

In the application of clay, sand, loam, marle, or chalk to lands, there are no particular chymical principles to be observed; but when quick lime is used, great care must be taken that it is not obtained from the magnesian limestone; for in this case, as has been shewn by Mr. Tennant, it is exceedingly injurious to land§. The magnesian limestone may be distinguished from the common limestone by its greater hardness, and by the length of time that it requires for its solution in acids, and it may be analysed by the process for carbonate of lime and magnesia IX

When the analytical comparison indicates an excess of vegetable matter, as the cause of sterility, it may be destroyed by much pulverization and exposure to air, by paring and burning, or the agency of lately made quick-lime. And the defect of animal and vegetable matter must be supplied by animal or vegetable manure.

XVII. Sterile Soils in different Climates and Situations must differ in Composition.

The general indications of fertility and barrenness, as found by chymical experiments, must necessarily differ

§ Philosophical Transactions for 1799. p. 365. This limestone is found abundantly in Yorkshire, Derbyshire, and Somersetshire.

in different climates, and under different circumstances. The power of soils to absorb moisture, a principal essential to their productiveness, ought to be much greater in warm and dry countries than in cold and moist ones; and the quantity of fine aluminous earth they contain larger. Soils likewise that are situated on declivities ought to be more absorbent than those in the same climate on plains or in vallies*. The productiveness of soils must likewise be influenced by the nature of the subsoil, or the earthy or stony strata on which they rest; and this circumstance ought to be particularly attended to, in considering their chymical nature, and the system of improvement. Thus a sandy soil may sometimes owe its fertility to the power of the subsoil to retain water; and an absorbent clayey soil may occasionally be prevented from being barren in a moist climate, by the influence of a substratum of sand or gravel.

XVIII. Of the chymical Composition of fertile Corn Soils in this Climate.

Those soils that are most productive of corn contain always certain proportions of aluminous and calcareous earth in a finely divided state, and a certain quantity of vegetable or animal matter.

The quantity of calcareous earth is however very various, and in some cases exceedingly small. A very fertile corn soil from Ormiston in East Lothian afforded me, in an hundred parts, only eleven parts of mild calcareous earth; it contained twenty five parts of silicious sand; the finely-divided clay amounted to forty-five parts. It lost nine in decomposed animal and vegetable matter, and four in water, and afforded indications of a small quantity of phosphate of lime.

This soil was of a very fine texture, and contained very few stones or vegetable fibres. It is not unlikely that its fertility was in some measure connected with the phosphate; for this substance is found in wheat, oats and barley, and may be a part of their food.

* Kirwan, Trans. Irish Academy, vol. V. p. 175.

A soil from the low lands of Somersetshire, celebrated for producing excellent crops of wheat and beans without manure, I found to consist of one ninth of sand chiefly silicious, and 8-9ths of calcareous marle tinged with iron; and containing about five parts in the hundred of vegetable matter. I could not detect in it any phosphate or sulphate of lime, so that its fertility must have depended principally upon its power of attracting principles of vegetable nourishment from water and the atmosphere§.

Mr. Tillet, in some experiments made on the composition of soils at Paris, found that a soil composed of three eighths of clay, two eighths of river sand, and three eighths of the parings of limestone, was very proper for wheat.

XIX. Of the Composition of Soils proper for bulbous Roots and for Trees.

In general, bulbous roots require a soil much more sandy and less absorbent than the grasses. A very good potatoe soil, from Varfel, in Cornwall, afforded me seven eighths of silicious sand; and its absorbent power was so small, that one hundred parts lost only two by drying at 400 Fahrenheit.

Plants and trees, the roots of which are fibrous and hard, and capable of penetrating deep into the earth, will vegetate to advantage in almost all common soils which are moderately dry, and which do not contain a very great excess of vegetable matter.

I found the soil taken from a field at Sheffield-place, in Sussex, remarkable for producing flourishing oaks, to consist of six parts of sand, and one part of clay and finely divided matter And one hundred parts of the entire soil, submitted to analysis, produced

§ This soil was sent to me by T. Poole, Esquire, of Nether Stowey. It is near the [illegible] the river Parret into the British Channel but I am told, is never overflowed.

Water	3 Parts
Silex	54
Alumine	28
Carbonate of lime	3
Oxyd of iron	5
Decomposing vegetable matter	4
Loss	3

XX. ADVANTAGES OF IMPROVEMENTS MADE BY CHANGING THE COMPOSITION OF THE EARTHY PARTS OF SOILS.

From the great difference of the causes that influence the productiveness of lands, it is obvious that in the present state of science, no present system can be devised for their improvement, independent of experiment; but there are few cases in which the labour of analytical trials will not be amply repaid by the certainty with which they denote the best methods of amelioration; and this will particularly happen when the defect of composition is found in the proportions of the primitive earths.

In supplying animal or vegetable manure, a temporary food only is provided for plants, which is in all cases exhausted by means of a certain number of crops; but when a soil is rendered of the best possible constitution and texture, with regard to its earthy parts, its fertility may be considered as permanently established. It becomes capable of attracting a very large portion of vegetable nourishment from the atmosphere, and of producing its crops with comparatively little labour and expense.

We understand, that a vein of Coal, fine and fertile, has been discovered in Chesterfield, about 3 miles from the banks of the Appamattox, and about twenty above Petersburg. Report says that it was principally traced by the means of the compass from the course of the rich veins on the James River. It will undoubtedly prove, in various lights, a considerable acquisition to the town of Petersburg. May not the same veins extend northwardly to the other watering courses.

Richmond Enquirer.

The editor is happy in the opportunity of presenting to the public "The Lucubrations of *Sylvanus* on soils." They are written by a farmer of considerable acquirements and observation, who resides in one of the lower Counties of Maryland—It is hoped that his laudable example will have many followers.

LUCUBRATION ON SOILS. No. 1.....

The extent of the surface of a continent is so vast the regions it embraces are so numerous, and the kinds of soil in each region are so many, and the resources of individuals are generally so few, that most men are deterred by the magnitude of the task from ever giving a latitude to their reflections on Soils. When they observe the great apparent variety of Soil immediately in their vicinity, or on a single farm, it appears a vain and fruitless task, to attempt to examine the various qualities that are to be found in a great division of the globe. Yet with the very limited knowledge of the subject already acquired, a classification into a few grand divisions, has already been attempted; nor is the task so difficult as at first it would seem. The outlines of the great divisions of soil, are drawn by the hand of nature, in a strong, bold, and conspicuous manner, and may, at any time, be observed by the naturalist, and farmer, sufficiently skilled, and ardent in the pursuit of knowledge, to undertake the necessary fatigue. The attempts (for such they must properly be called,) that have been already made, however imperfect, have greatly contributed to throw light upon the subject, and to conduct the enterprizing mind to further knowledge. With the same good intent, I mean to methodize and state what little I have read upon soils in general, in my hours of study when my plantation work was done, or have learnt by observation in riding through the country — I feel no fear of being deemed presumptuous in expressing my thoughts upon this subject, whatever may be its magnitude, and however few and inconsiderable my observations may be, provided I can throw the smallest ray of light upon a subject, so very useful to all men.

The varieties of soil* in every great division, that could be made, of a portion of the globe, is no doubt considerable; yet every investigating and reflecting mind will perceive, that there must be considerable degrees of affinity in soils, whose foundation is granite, calcareous stone, sand-stone, or that are bedded in schistous rock; so likewise in regions that are alluvial, and in those that are exposed to a marine atmosphere, and those that are exposed to exhalations of a different kind.

The kind of surface which any kind of soil possesses must also give it a peculiar character, visible, and easily understood without the assistance of analysis, or a minute examination. With the assistance of these and such like striking traits, and distinctive characteristic marks apparent, at first view, to the eye of the most unlettered farmer, an arrangement and classification might be made, that would not be without its uses. The surface of the soil has more to do with the labours of the farmer, and the productions of the earth, than the interior structure. The fertility of soils depends also more upon their surface, than is at first imagined, as I will shew in the sequel.

A classification bottomed upon the subterranean geography of a country, would no doubt be desirable, not only to the artist, mineralogist, and chymist, but would greatly assist the agriculturalist—in as much as it would set bounds, more precise and accurate, to the different regions, and more clearly develope the occult affinities and differences of soil. But this requires resources and

* "Soils as Kirwin observes, consist of different combinations of two or more of the four primitive earths, namely the calcareous (which I sometimes call mild calx) magnesia, argil and the silicious. For a more accurate description of these, I must refer to books of mineralogy, and shall only remark, that by calcareous earths are meant chalk and all stones that burn to lime. They are easily distinguished by their property of effervescing with acids."

labours, too great for private individual enterprize. Therefore, without embarrassing this sketch with vain regrets, at not being able to do more, I will proceed to state what I do know.

As we approach the land from the great watery region, the first kind of land we meet with, are beaches of sand forming islands, and peninsulas, stretching along the main land according to the course of currents, or the beating of the surf, or the form of the main lands: and differs from the most kind of land, in as much as it is formed out of pure sand, pebbles, and undecayed seashell. The next kind is the river formed land, or alluvial region, formed by the sediment of rivers, and composed of clay and sand, intermixed in nearly equal proportions, at least when it is first deposited. Some writers have extended this region to the foot of the mountains; and Evans, the geographer, and Volney, have extended the littorral or beachy region to the cascades or tidewater. There may be some good reasons for thus bounding these regions; but as the rivers I conceive have had the latest agency in the formation of the soil, from the falls or cascades to the mouth of the rivers, it appears to me, that that tract of country contained within a line drawn from the head of tide water to the mouths of the rivers, may more appropriately be called the alluvial region; and the beaches and islands of sand, which stud, point, and fringe the coast, alone I call the *littoral or beachy region.* From tide water to the foot of the mountains, may safely be classed by itself, and termed the *hilly or tideless region.* The mountains and their vallies are properly denominated the *mountainous region,* or parent soil, from which, in all times, new soils are forming. Insufficient and indefinite as these divisions are, they may serve as the beginning of a system of classification, and to establish a few conspicuous land marks, to guide the inquisitive farmer in his researches. After having briefly described a few distinctive features of each of these grand divisions, and given some of the most prominent qualities

of the soil, interspersed with a few explanatory and generalizing ideas, I will proceed to a more minute and specific description of the soils, most commonly found, giving this analysis as taken chiefly from Kirwan and the most approved chymical writers, shewing what constitutes a fertile soil, and in what they differ in each of the above grand divisions, and in what consists the chief food of plants.

First then, let us recapitulate the grand divisions:—They are four in number, viz.

The Beachy or Littoral Region.
The Alluvial Region.
The Hilly or Tideless Region.
The Mountainous Region.

It will at once be seen, that each of these regions is susceptible of almost innumerable divisions and sub-divisions, or genera and species. To attain to a full and perfect knowledge of these, is the grand desideratum of farmers, and I trust that the united labors of a great Agricultural nation, enjoying the blessings of freedom, and abundance, will, by continuing to accumulate atoms, in no distant time, arrive at this Herculanean goal of their enquiries.

Of the properties and distinct qualities of soil to be found in the beachy region. In general it is a very light soil, consisting of sand and a portion of calcareous matter, bedded on rock, generally the primœval rock or granite. Sometimes islands or mounds of sand and pebbles, are thrown up by the force and long continuance of currents alone In general the soil of this region is little fitted to the purposes of Agriculture. Some of the islands along our coast, are, however, from particular local causes, exceptions to this rule.

The alluvial region, according to the definition already given, is the river formed land, and extends to the falls of the rivers. This region, therefore, from its extent, contains many kinds of soil, susceptible of divisions by well marked and distinct boundaries, which may be traced on the surface with sufficient clearness, to give a

just perception of them. Before, however, we proceed to attempt to set bounds to the principal divisions of this region, it will be satisfactory to give some idea of its formation, and this I cannot do better than by commencing with the description given by Mr. Volney, in speaking of what *he* calls the alluvial or river formed soil of the United States, in the following words:—

"The remaining region is the country which undulates beyond the ridge of Talc, to the foot of the Sand Stone, or granitic mountains. This limit is traced with most difficulty in Western Georgia, where the vein of Talc does not shew itself. This surface is distinguished by its risings, sometimes in long waves, and sometimes into round and insulated eminences; by the variety of its earths and stones, sometimes confused, and sometimes arranged with regularity, and which appear and disappear many times successively, from the mountains to the maritime plain; always bearing the appearance of having been brought gradually down by the rains and rivers, from the heights, and such in truth, is the origin of all this country. When we calculate the volume, the rapidity, and the number of these streams; of the Delaware, Schuylkill, Susquehannah, Potomak, Rappahannock, York and James Rivers, &c—when we observe that long before their mixture with the ocean, they spread themselves to a breadth of from half a mile to three miles, over a bottom from twenty to sixty feet deep; that in their annual floods, they rise sometimes to a height of twenty feet above their ordinary level, we shall easily perceive what immense portions of earthy matter must be carried about; especially as in former ages the mountains must have had a greater elevation and of course given greater swiftness and force to the torrents; that the forest trees torn up and carried off by thousands, added to their destructive course; that the ice accumulated by six months of winter, forms vast mounds, such as took place in 1784, in the Susquehannah, at McCall's ferry, near Columbia, where a barrier of this kind more than thirty feet high, was formed by

the *breaking up*, and laid the whole valleys under water. At these periods when the ocean bathed the foot of the mountains, of which there are every where manifest traces, the higher mountains, as yet undiminished by the loss of those particles of which time and the torrents have since despoiled them, augmented the motion and force of the descending waters, by the height and abruptness of their points. Their summits being colder, were covered with deeper snows for a longer time, and when the heats of summer, shorter no doubt but not less intense than at present, dissolved these snows, the torrents, thus formed involved a greater quantity of earth, hollowed out deeper channels, and bore away trees with their roots, and large masses of soil connected with their fibres, all which they deposited in the lowest shelves of the mountains. In following years new wrecks accumulate and cloy the ancient channels: the torrents impeded thus by mounds of their own creating, have their volume and impetuosity augmented, till they find their way through the weakest part, and carry the softer matters onward by new channels, while the more ponderous fragments remain behind By a process of this kind continuing incessantly for ages, the beds of ancient torrents enlarge gradually into vallies, and what were once sharp edges or hard bottoms of the streams, become slopes and plains. The waters descending from level to level, and leaving at each resting place their grosser matters, gradually deposit the lighter and more soluble; thus circumscribing the ocean by continual accessions of sand, mud and pebbles, all of which are arrested and bound together by the trunks and branches of trees. The Mississippi offers a luminous example of all these operations. It has been computed by Liancourt that between 1720 and 1800 a period of eighty years, this river has advanced its banks fifteen miles into the sea. Thus under the eyes of three generations, it has raised a new country from the sea which daily encreases, and where beds of coal are slowly forming, and accumulating for the use of future ages. So rapidly does this deposition

take place, that at New-Orleans, three hundred miles above the actual mouth of the river a canal lately dug by the Baron de Carondelet, between Lake Pont Chartrain and the Mississippi, has brought to light a substratum of black earth, mixed with remains of trees, which have neither had time to be decomposed nor converted into coal. The two banks of the river are entirely composed of trunks of trees cemented together by mud, for a length of upwards of three hundred leagues to the height of twelve or sixteen feet. Hence it is, that the vernal inundation which swells the river thirty feet above its ordinary level, and overflows the adjacent country, which is lower than the bank, is hindered from entirely returning, and stagnates into immense marshes. These swamps are at present a bar to culture and population, though hereafter they may supply the means of inexhaustible fertility."

To these observations of Mr. Volney, the correctness of which no one who will take the necessary pains to investigate, can doubt, we shall add a few more to shew the other processes of nature, that contribute to the formation of this region. The clay, stone, sand, ligneous and vegetable substances, that are thus brought down from the heights by the waters, deposit themselves along the bottoms and margins of the rivers, forming shelves, plains and banks. On these banks there is an annual growth of aquatic vegetables which periodically decay, and thereby add to the surface; in addition to which, there is an annual deposit of shells and other marine substances, the increase of which is very great and beyond computation. Shell fish, at least the most common kinds, require little more than a year to get their full growth, and very soon decay. These form strata, which are again covered by the sediment of the river, and re-placed by a new growth of shells; thus is the land continually increased by a slow and gradual process. When in the lapse of time these banks immerge from beneath the water and become exposed to the genial rays of the Sun, they are in a short time covered with her-

bage and trees, whose decay serve again to fix the fluid, and to give to this new made land a yearly coat of loam, which increases its fertility and consequent deposits.

Thus the growth and decay of aquatic, vegetable and animal substances, and the fall of leaves and trees, the annual decay of herbage, and we may add the mortality of animals, assist in the formation of the alluvial region.

The extent of this region is great, and the surface various and capable of many and great divisions. The first division that presents itself, and that may be traced by a strong line, is that tract of land which commences at the mouths of all great rivers, and is bounded by a regular mound or ridge, shaping its course in conformity to the course of the rivers, and of the inlets and creeks that make into the rivers. The surface of this land is almost a perfect level, and not raised many feet above the water; on the surface very little stone is to be found. The soil of this division which for sake of distinction, may appropriately be called "The flat stoneless" division, is almost in all its parts an even mixture of sand and clay, interspersed with calcareous substances in a great state of division, together with a considerable proportion of decayed vegetable matter, just as it was deposited by the water, and in the ways already mentioned, without having existed centuries sufficient to become completely amalgamated. This flat stoneless region on the eastern and western shores of Virginia and Maryland, occupies a considerable space at the mouths and along the banks of the principal rivers and creeks, and is nearly all one and the same soil; occasionally interspersed with ridges of sand: a great portion of it is a stiff soil, and from its stiffness it is supposed by superficial observers to be a clay soil, or to have what is called a clay foundation; this is on examination found to be erroneous, though it has a sufficiency of clay for every agricultural purpose, and for making of bricks. It may properly be termed a loam—by loam I mean a soil of clay, sand and decayed vegetable substances, mixed. It was no doubt a very fertile soil until it was impoverished

by bad cultivation. The stiffness of this kind of land is not so much owing to its component parts as to its surface. If it was situated on declivities it would be of a loose and open texture; but situated as it is with a very level surface, it holds water a long time, which causes it to sob, and after to bake and become very adhesive, and this circumstance gives to this whole region the appearance of a stiff clay soil. Wherever this kind of land is well drained by ditches, it grows perceptibly more loose and light, and where there are natural drains formed by the undulation of the land, or where there are knowls or detached risings it is uniformly a light and open soil, because it never bakes, and because its particles of clay, mixing with the water, are lessened and carried off by every rain. The proportion of sand is greater, and always still more increased by bad cultivation. Under good cultivation its increasing lightness or looseness will be properly checked by deep ploughing and by vegetation, and will become advantageous. Under bad cultivation its increasing lightness will yearly add to its poverty. This kind of soil, in the states mentioned, is well adapted to wheat, the lighter parts to rye and Indian corn. The marginal part of this first step in Virginia and Maryland is covered altogether with resinous trees, chiefly the long leafed yellow pine, cedar and gum; a little distance from the margin you find the woods intermixed with oak, chiefly white oak. The proportion of oaks increases until they occupy nearly the whole ground at the foot of the first rising or gravelly ridge, which bounds the flat stoneless region; at least we find it so where the primitive growth has never been cut down. In this region the calcareous substances that are found in any quantity, are generally only in a small state of decay.

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LUCUBRATION ON SOILS No. 2.....

The second shelf in the alluvial region, which may be designated by the name of the *undulating or siliceous region*,§ begins at the ridge which forms the upper boundary of the flat stoneless region, and extends to the line of tide water. At this boundary ridge, which divides the first and second shelf, the soil begins to be intermixed with a portion of fine gravel, increasing in size and quantity as you ascend with the rivers. The surface of this second shelf, though in a great measure level, is yet intersected with small streams and drains, which have washed gentle declivities and risings. These declivities as you approach the head of tide water, assume more and more the appearance of hills. It is evident on reflection and examination of this second shelf in the land, that it once was as level as the flat stoneless land, until the springs, streams, drains or gullies, have, in the course of time, washed deeper and deeper, and their banks, which at first were steep, by a like gradual process, have assumed the appearance of gentle declivities. These declivities and their risings give to this region an undulating surface. The kind of soil that here prevails, abounds in gravel from fine to very coarse or stony, more or less apparent on the surface, according to the complexion and quality, or situation of the land. There are portions of this tract sometimes to a considerable extent, where fine siliceous sand prevails.

In this region the calcareous substances that are found in masses, are generally mixed with clay or sand. The shell of which they are composed being nearly decayed, and many times altogether so, forming yellow, blue or

§ Silex or siliceous earth is often found in a stony form, such as flint or quartz; and still more frequently in that of a very fine sand, such as that whereof glass is made. It does not effervesce, nor is it soluble in any of the common acids.

grey marl, according to the colour of the clay or sand which predominates, and according to the quantity of the shell, or richness of the mark.—Marl is to be found in almost every part of this region, from 20 to 40 feet below the surface. The kinds of wood which predominate in this region, in Maryland and Virginia, are oak of all kinds, cedar, and the inferior kinds of pine; chesnut, hickory and other trees, are also frequently found, but rarely if ever predominate. Wherever in this gravelly region the oak has been cut down, and the land has been cleared and cultivated, and then turned out as it is called, it will generally put up in cedar and the meaner kind of pine, which growth, according to the observation of old men, does not continue longer than half a century, when the oak resumes its place. This growth of resinous trees seems to be intended by nature, to render light lands, and new-formed lands, more adhesive and compact, at least we have reason to suppose so from their glutinous quality; and from their generally growing in light lands, their tap roots sink deeper into this unconcocted earth, than the roots of any other kind of tree, and enable it to draw up more nourishment, and of course to throw off more foliage, which communicate their glutinous qualities to the soil. It seems probable also that their tap roots, which penetrate to such an amazing depth, particularly of the pine, far beyond the reach of frost, may be one cause of their perpetual verdure. When these large and deep descending roots decay, they may also serve as conductors of water and air, to assist nature in the great work of composition and decomposition, among the strata of the yet crude materials that form the basis of this new made land: in the course of revolving ages, when their task is finished, their place is supplied by trees of a different kind, that are intended to answer other great and mysterious purposes.

The soil of this division is drier and warmer than that of the flat stoneless division, and of course vegetation is somewhat quicker, and grain arrives sooner to maturity. It does not, however, abound so much in natural

riches, because from its undulating surface it is not so well calculated to retain them. From this circumstance, also the siliceous particles abound more on the surface. The stones or gravel which form a large portion of this soil, increases in size the higher you ascend the rivers. The gravel of the lower dividing ridge of this second shelf, is very fine; ten miles higher up, it is perceptibly coarser. As you approach the head of tide water, stones of a considerable size are found.—These stones and gravel are formed, as I apprehend, partly from the fragments of rocks that are torn away by the torrents, and are broken, divided and subdivided, and rounded off as they are rolled along, crowded together in the bottoms of streams and rivers, until they arrive at the places in which they become fixed: the further they are carried, the more are they broken, and the more is their size diminished. The finer particles or dust, which is detached by this continual rubbing and washing, is carried to the ocean, where it serves to form the pebbles that are cast back by the waves upon the shores. Another part is formed by the affinities of the siliceous particles that compose so large a portion of this region. The more ancient the soil, the more time has there been for the operation of the great laws of composition, and the larger are the products. This increase in the size of the stones the higher you ascend the land, seems wisely intended by providence, to preserve the moisture of high lands which would be too much exhausted for the purposes of vegetation, by reason of its general unevenness and elevation, were it not for the retentive properties of its stones.

It also may be remarked of the marls which are found in this region, that the disposition to turn to lime-stone increases the higher you ascend, though they very rarely shew themselves on the surface, but may be occasionally observed in banks that have been worn by streams.

Before we proceed to the description of the next grand region, it may be useful to recapitulate the subdivisions of the alluvial region, to wit: The flat stoneless and the undulating or siliceous.

More might no doubt be made, but with these I shall leave the subject to those who may have more opportunities, and more leisure. SYLVANUS.

For the Agricultural Museum.

THE SEA WEED.

The Sea-weed (*alga marina*) so frequently met with on the Northern Shores of Europe, is unknown on this side of the Atlantic. I have never heard of any attempt to transplant it, or to cultivate it, on the coast of the United States, and am entirely at a loss to know, whether its absence is to be imputed to the nature of our climate, or merely to the want of the seed or root for propagation. The value of the plant entitles it to attention, and it would be proper to make the experiment on our coast, in order to ascertain whether it could be naturalized or not. It would not require much trouble or expence to attempt it, as any of our vessels, public or private, might bring along with them some of those stones, on which the *alga marina* had taken a firm root, and drop them on the beach, between high and low water mark, on salt water, from whence they might afterwards be removed to a permanent situation.

The *alga marina*, where nature hath given it spontaneously, demands no labor of cultivation. Wherever a stone of sufficient size, appears on the sea beach, it is quickly covered over by the plant, which attaching by a small tendril to the body of the stone, shoots out successive branches, of a size greater than the parent stem Those stems are at short intervals set with hollow tumuli, distended with air, which serves to float the whole fleece on the immerging tide, and grow in two years to the length of three feet, in favorable situations, when it is ready for the sickle. Stones brought from the lands adjacent, placed on proper situations, have been known to produce a crop in five or six years after being set down, the weed springing spontaneously, the first year after planting.

Its uses are for manure, for feeding cattle, or for burning, (when dried), into kelp, a sort of bleaching stuff.

As manure, the *alga* is peculiarly favorable for gardens, having a tendency to destroy the grubs and insects, common to such grounds. An acre of shore property covered with stones, in bearing, will manure annually an acre of arable land, and will give a heavy crop, and more permanent fertility than the best stable manure. For feeding cattle, the plant is not so well approved, as it is not known to be used in this way, unless in seasons of scarcity; when it is given to neat cattle after slight boiling, being of an unctuous appearance, it might be supposed to be nourishing, but whether it be from the disrelish of the cattle, or the nature of the plant itself, it will, not fatten them as well as the ordinary vegetable fodder. For kelp, its value is pre-eminent, being cut, and spread out in the Sun, it dries immediately, and is burned in pits, into a liquid lava, and when cool, is taken out in lumps, and in that state sold at factories, where bleaching is required.

The great extent of the flats and beaches along the coasts, and in the bays of the United States, affords abundant scope for the production of this useful plant, and in all such places where stones are already placed or could be easily obtained, it would form a rich addition to our indigenous stock, if it could be naturalized on this side the Atlantic.

The probability is, that the current of the Gulph, bearing off this coast, prevents the germinating principles of the *alga* from reaching our shores by any other mode than that which has been mentioned, the introduction of some of the stones with the roots adhering, to be placed in some suitable situation, under the care of some practical gentleman, from whom the public might expect to derive information of the result.

J. N. T.

Washington City, March 4th, 1811.

For the Agricultural Museum.

On Agricultural Schools.

Of infinite importance are early impressions and early habits. Education, in a Republic, ought to be considered not only as highly conducive to the interest and happiness of its citizens, but, as the very foundation of its permanency. Great attention has been paid in this country to what is called a common English education—almost every one, male and female, is taught to read and write, and there are numerous Colleges and Academies, where those who have leisure and inclination, and can afford the expence, may make still farther advances in science, and that to any useful, and almost to any desirable degree. But many young men, or their parents for them, have mistaken their talent, and given the bent of their genius a wrong direction The professions of Law and Physic have become overstocked, and thus afforded the occasion, or the pretext, for multitudes to waste their existence in lounging and dissipation, who might have made good practical farmers, had they been brought up to honest industry in the cultivation of the soil, and with a much less expensive education.

By many it is supposed, that Agriculture is the only profession which requires little skill or previous knowledge, but that a man becomes a farmer, as soon as he enters on the possession of a farm. Hence, without doubt, arises the miserable state of our Agriculture in general, and the many unsuccessful attempts by individuals who have failed from no other cause, than the want of sufficient knowledge and experience. Agricultural Schools are therefore proposed, as the most ready and effectual method of introducing skill, and stimulating to industry in this important occupation.

To those who have ever reflected on this subject, how delightful would it be, to behold a numerous train of idlers converted into so many useful citizens; and instead of contributing to the misery and final dissolution of society, to see them raising themselves and their

country to real greatness, by honorable and well directed industry.

To promote this important object, let at least, one Agricultural School be formed under the patronage of each State government. Let a farm of one or two thousand acres be procured, furnished with implements of husbandry and well stocked—and let there be two professors; one, an active and intelligent practical farmer,—the other well acquainted with botany, history, mathematics, philosophy, and whatever may be requisite to a complete English education. A youth, by entering an Institution of this kind, would greatly relieve his parent from the expence usually attending the common mode of education, and would have the best opportunity to attain to a competent knowledge of a profession the most honorable and useful in the world. By exercising himself at the plough, the spade and the hook, his body would become hardy, active and vigorous, his mind would receive that cultivation that would qualify him for becoming a useful and valuable member of society.

It is this kind of education that is calculated to render us independent, especially in the Southern States of the Union; where, unfortunately, too many of our young men are devoid of a proper taste for rural employments, and would think themselves degraded in being found on a farm of ordinary size, or in paying that attention to it, which is absolutely necessary to insure success. Thus it frequently happens, that if their land is rich, it soon becomes impoverished by neglect or mismanagement; if it is poor, they fail of a livelihood, not knowing how to improve it; and in either case they must leave their friends and the land of their nativity, and seek a refuge in some distant country. But that I may not trespass too long upon your useful pages, I will close these miscellaneous remarks, with expressing the hope that the subject of them will attract the attention of some more ready writer than

Your Friend,

A FARMER.

UPON THE CULTURE OF HEMP.

Translated from the Treatise of Mons. du Hamel du Monceau.

Hot climates are not well adapted to the raising of hemp. Temperate regions suit it best, and even in cold countries it grows to advantage, such as Canada, Riga,† &c. which produce it in great abundance, and of good quality. From this last place, France, England, and Holland, annually derive a great supply.

The soil should be soft, easy to till, rather light though fertile, well manured and cultivated. Dry lands are not good. In such the hemp does not come up well. It is always short, and the thread generally too ligneous, which renders it hard and elastic; great defects these even for the coarsest uses, as we shall see in the sequel. It nevertheless in rainy seasons succeeds better in dry than in moist grounds; but such seasons are rare, on which account it is commonly sown by the side of a rivulet, or a ditch filled with water, in order that the water may be at hand, but not so as to overflow it. Such lands are called in some provinces courtiers, or courtits, and are much sought after.

Every kind of manure which makes the soil light is suitable. On this account horse dung, the excrement of sheep and pigeons, the sweepings of the poultry yard, the manure taken from stagnant pools, when ripened by age, are preferable to the dung of the ox or cow. Whether marle is used or not I am not able to say.

The right course is to manure the hemp fields annually before the winter tillage, that the manure during the winter may have time to rot, and that it may more easily mix with the soil when tilled in the spring. The pigeon dung is the only one they spread at the spring or last tillage, and this they do to avail themselves of its whole strength. However, when the season is dry there is danger of burning the seed, which does not happen

† It is the Ukraine which produces the Hemp, and Riga is only the port from which it is exported.

when it is spread in winter. In this case a greater quantity is necessary to produce a good crop.

The first and most important tillage is performed in December or January, which is called mid-winter tillage. Some do it with the plough, making furrows, others with the hoe, also making furrows, that the winter frosts may more easily penetrate the soil; some also perform this work with the shovel or spade, which is doubtless the best mode—but this requires more time and labour, whereas the use of the plough is the most expeditious and least profitable.

In the course of April the seed is put into the ground. Some sow a fortnight sooner than others, and all take different risques. The most early are exposed to the frosts, which do great injury to the young shoots, while those who sow too late run the hazard of droughts, which sometimes prevent the hemp from coming up.

The seed should be sown thick, otherwise the stalks will be large, the bark will be too ligneous, and the threads too harsh, which is a great fault; yet when it is sown too thick, many of the roots are choaked, and this is an injury. A medium should be adopted, which habit will point out, and generally the stalks are not too sparse but when a part has been destroyed either by frost, by drought, or other accidents.

It is proper to remark, that the hemp is an oily seed, which grows rancid by age, and then it will not vegetate; wherefore the seed of the preceding year should alone be put into the ground. When seed two years old is sown, a great part will not come up; and if older, still more will perish.

When the hemp is sown, it should be covered with earth. This is done either with a harrow, if the land has been prepared with a plough, or with a rake if prepared with a hoe or spade.

Notwithstanding this precaution, the hemp must be carefully guarded until completely come up; otherwise, a variety of the feathered tribe, pigeons especially, will destroy the whole, even the seeds that are best covered.

It is true that pigeons, and those birds that do not scratch, do no damage to grain when covered with earth; but the difference between the two kinds of seeds is, that grain does not force itself out of the ground with the shoot it produces, whereas hemp seed forces itself out when it vegetates. Then it is that the pigeons make great havock, and upon sight of the seed, tear the plant and make it wither.

The peasants endeavour to fright away the birds by scare-crows; they also set their children to protect the hemp. But these precautions are not fully adequate; for the task is difficult when the fields are extensive, and hunger stimulates the pigeons. Indeed I have seen strong persons and even dogs, from excess of fatigue, abandon their charge. Fortunately this care is not required any length of time. There is an end of it when the foliage has multiplied.

The fields, which until the springing up of the hemp, require much care and labor, demand but little more until harvest. It suffices to maintain the surrounding ditches in order, and to keep off the cattle. Yet in great droughts there are some industrious people who water their fields, provided they are of small extent, and the water is at hand, and that they cannot be overflowed, which is, I believe, practised in some parts.

I have already said that accidents sometimes happen to make the hemp field thin, and it has been observed that the hemp is then thick, full of branches, and incapable of yielding a good thread. In this case, to derive something from the field, if seed only, which form the coarseness of the hemp will be of better quality, the field should be weeded to prevent the weeds from choaking the hemp.

Towards the beginning of August, the stalks which do not bear seed, and which are improperly called female hemp, but which I call male, begin to turn yellow at the top, and white at the bottom, which indicates them fit to be pulled. At this time, women enter the field and pull up all the male stalks, of which they make

bundles and arrange them on the borders of the field, taking care not to injure the female stalk, which must remain unpulled sometime longer, to bring to maturity its seed.

Before the male hemp is gathered, some persons sow turnip seed, which buries itself in the holes from which the stalks were extracted, and in those made by the footsteps of persons employed therein. Turnip seed is also sown when the female stalks are gathered, in order to have two crops; but this part of husbandy, not belonging to our subject, we dismiss it.

It has been already observed, that the male hemp was bundled up after being gathered. In doing this, they put stalks of a like length together and place the roots even. Each bundle is tied with a hemp stalk.

They are then exposed to the sun to dry the leaves and flowers, and when well dried, each bundle is beaten against the trunk of a tree or against a wall, and they then attach together several bundles, and make one sufficiently large to carry to the Routoir.

The place called the Routoir, in which the process of rotting is performed, is a ditch of from eighteen to twenty-four feet long, from twelve to eighteen feet broad, and from three to four feet deep, filled with water This is often supplied by a spring, which after filling, the rutoir is let off through a channel prepared for it. Some rutoirs are only a ditch made on the border of a river; some, even in contempt of the laws, use no other rutoirs than the bed of a river. In fact, when there is no spring nor river at hand, they deposit the hemp in the ditches that are filled with water, and in the meadows. Let us now take a view of the end they propose by this method of rotting. To do it they arrange it at the bottom of the water, they cover it with a layer of straw, they secure it under water by pieces of wood and stone. It thus remains until the bark, from which the thread proceeds, is detached with ease from the stalks. This is ascertained by trying from time to time whether the adherency of the bark to the stalk still continues. When it is sever-

ed with ease, the hemp is thought to be sufficeintly rotted, and is then taken from the rutoir. This operation effects more than the detaching of the bark from the pulp. It renders the filament soft and fine; but to understand how this result is produced by water, a knowledge of the organic disposition of the stalk is necessary. This I will attempt to explain, with as much brevity as I am able.

The stalks are hollow in the middle, or filled with a soft pulp. This is surrounded with a tender and fragile wooden substance, which is called the chenevotte or stalk stripped of its bark. Over the chenevotte is a bark, rather fine than otherwise, composed of filaments which extend the whole length of the stalk. This bark adheres closely to the chenevotte and the longitudinary fibres which compose it are joined to each other by a vesicular or cellulary texture The whole is finally covered with a very fine membrane, which may be called the epiderme. The object proposed in immersing the hemp, is to cause the bark to detach itself with more ease from the stalk, and to destroy the epiderme with a part of the cellulary texture, which binds together the longitudinary filaments. All this is brought about by putrescence, for which reason it is hazardous to keep the hemp too long immersed, for then it rots too much; in other words, it acts not only upon the outer skin and the finer fibres, but it acts with too much force on the longitudinary fibres; in fact it rots the hemp too much, and in that case the thread loses its strength. On the other hand, when the hemp has not been long enough in the water, the bark continues to adhere to the stalk, the thread is hard, elastic, and cannot be made fine enough. There is therefore a medium to be observed, and this depends not alone upon the extent of the time of the immersion of the hemp, but also—Firstly, upon the quality of the water; which when still, rots the hemp sooner than running water; so does foul sooner than limpid. Secondly, upon the temperature of the air; as it rots sooner in warm than cold weather. Thirdly— upon the

quality of the hemp. That which has been raised in a free soil, and duly watered, and which has been gathered green, is sooner rotted than that which is raised in strong or dry soil, and which has been suffered thoroughly to ripen. In general, it is thought that when the hemp remains but a short time in the water to rot, the thread is better. On this account it is said, that hemp should not be rotted but in warm weather. And when the autumns are cold, some defer until the spring following to put the female hemp in water. Some even prefer to rot their hemp in stagnant and even in putrid, rather than in fresh running water. I have put it into different waters to rot, and it has appeared to me that the thread of the hemp rotted in putrescent water was softer than that rotted in running water; but the filament contracts in stagnant water a disagreeable colour, which in truth does not damage it, for it bleaches thereby more easily; yet this colour is disgusting, and on that account the filament is not so merchantable. For this reason, when it can be done, they turn a little stream into the routoirs to renew the water and prevent it from becoming putrescent.

I have made out to rot the hemp by spreading it over a meadow as they do linen to whiten it; but this is a tedious mode. The thread, however, has appeared to me not very different from that rotted in the usual mode. I have further attempted to boil the hemp in water, hoping in a short time to bring it to the same state as when taken out of the routoir; but after having boiled it more than ten hours, on taking it from the water to dry, it was not in a condition to be thoroughly separated, or fit for the brake. It is true that when it was broke warm and wet, the bark was detached with ease, but it remained like a ribband. The cellular texture not being removed, the longitudinal fibres cohered. They could not be separated; and it was impossible to make the hemp sufficiently fine. From this it is evident, as we have before observed, that it is next to impossible precisely to define the length of time that hemp should remain in the rou-

toir; since the quality of the hemp, that of the water, and the temperature of the air impede or advance its progress in this operation.

The usual criterion that the hemp has been sufficiently rotted, is, when the bark is easily detached from its stalk from top to bottom. It must also be allowed that the habitual employment of the peasants who cultivate it, must aid them much in deciding upon the requisite degree of rot. They however are sometimes mistaken; and I have observed that in some provinces they are in the habit of rotting it more than in others.

I must not omit to caution against rotting the hemp in water in which the fresh water shrimps abound; for these animals eat and almost destroy the thread.

When upon the subject of gathering the male hemp, we remarked that the female was left standing to gain time to ripen its seed. This however causes the hemp itself to become too ripe. Its bark becomes too ligneous, and of consequence its threads thicker and coarser than that of the male. Notwithstanding this, when the seed appears to be well formed, the female hemp is gathered in the same manner with the male, and arranged in sheaves.

In some places, to complete the ripening of the seed, they dig in the hemp field round holes of a foot depth, and from three to four feet diameter. In these they put a number of sheaves well bound together, with the heads of the sheaves in the holes and the roots above. They are fastened in this situation with cords of straw, and the earth which has been taken from the holes is heaped up round the bundle of sheaves so as to cover their heads. Aided by their own moisture, the heads become heated as green hay does placed upon a layer of manure. This fermentation completes the ripening of the seed, and disposes it to leave its shell with more ease. When the seed has acquired this quality, the sheaves are taken from the holes, where they would be consumed were they longer to remain. In other cantons where much hemp is raised, they do not bury the heads in this way, but stack the

sheaves placing their heads together, and extract the seed in the manner I shall presently show.

Those who raise but small quantities, spread cloth upon the ground to catch their seed. Others clean and prepare a smooth piece of ground, upon which they place the hemp with the heads all on the same side. They then beat it lightly with a piece of wood or flail. This brings out the best seed, which is put by for sowing the next spring. There still remains much seed in the heads. To extract it, they pass the heads through a comb with iron teeth. This takes off at once the leaves, the teguments of the seeds, and the seeds themselves. The whole is kept in a heap several days, then spread for drying, then beaten or threshed, and winnowed to separate the seed; with this they feed birds and make hemp-seed oil. The sheaves are carried to the routoir, to pass through the same operation with the male sheaves.

When the sheaves are taken from the routoir, they are opened for drying, and spread towards the sun by the side of a wall, the borders of a ditch, or on open ground if it is not moist. They take care frequently to turn the hemp, and when well dried it is again put into sheaves to be placed under cover, where it is kept dry until they are ready to break it with the hand or a brake. In some provinces it is wholly broken and separated by the hand, and in others those only who raise small quantities, break it with the hand; the rest use the brake.

The manner of doing it with the hand is so simple that children can perform it as well as grown persons. It consists in taking the threads separately, breaking the stalk, and detaching the threads by pulling them through the fingers. This mode appears rather tedious, but as it is pursued at leisure hours, and by children who take care of the cattle, it is but of little expense to many families; but to small families it occasions great loss of time which the use of the brake would save.

Before it is broken, hemp ought to be well dried, or, as the peasants say, well baked. For this purpose, they have at some distance from their houses a haloir or dry-

ing kiln. Some peasants dry the hemp in the chimneys of their dwelling houses; but this is a very dangerous practice. Some place it in their ovens to dry; these do not indeed expose their houses, but their hemp often takes fire; besides, in this mode a large quantity cannot be dried. The haloir is only a cavern commonly of six or seven feet high, five or six broad, and nine or ten deep. The underside of a rock frequently makes a very good haloir. Some are arched with dry stones; others are covered with large flat stones; others merely with pieces of wood covered with earth. Every man makes them according to his fancy; but all aim to place them secure from the north wind, and to give them a southern aspect. Because the breaking season is generally when the great frosts prevail, and when agriculture is at a stand.

About four feet above the fire place of the haloir, and two feet from its mouth, three wooden bars are fixed of about an inch diameter; they cross the haloir from one wall to the other, and are thereby supported by the walls. Upon these wooden bars the hemp is placed of the depth of six inches to be dried. Thus arranged, a careful woman keeps up, underneath, a fire made of the useless part of the stalks; care is requisite, because the stalks, which are the common fuel for the purpose, consume rapidly, and require to be constantly supplied to support the fire in every part of the cavern; and equal care is necessary to prevent the flame from rising and communicating with the hemp, which is very combustible, especially after it has been some time in the haloir. The same woman must turn the hemp over, to dry it equally on all sides. She must also place fresh hemp when that which is well dried is taken away to be broken.

[To be concluded in our next.]

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UPON THE CULTURE OF HEMP.

Translated from the Treatise of Mons. du Hamel du Monceau.

(Concluded.)

The brake resembles a joist five or six inches square and seven or eight feet long, with two large slits of at least an inch broad sawed out from one end to the other, and the three longest or separate parts, formed by the two slits made into the shape of a knife. Upon this piece of wood is placed another which is connected with it at one end by a turning joint, and which at the other end affords a handle, and between the two ends bears two knives or iron plates, which go into the slits or mortises of the lower piece.

The man who uses the brake, takes a handful of hemp in his left hand, and in his right the handle of the upper jaw of the brake; he then places the hemp between the two chaps, and by repeatedly and forcibly raising and lowering the uppermost he breaks the stalks, and, drawing them through both, he forces the pulp from the filament; and when one half of it is thus broken, he takes that in his hand to pursue the same course with the other end. At length, when they have well broken about two pounds of hemp, they double it in the middle and twist the two ends strongly towards each other. This is called hemp ends, or coarse hemp.

The two methods, that of breaking with the hand, and that in which the brake is used, have each their advantages and defects, as we shall in course point out.

It has been frequently said that the hemp intended for the fabrick of fine cloths should be more rotted than

that destined to a coarser fabrick; and that that designed for cordage should be the least rotted.

We have already remarked, that hemp not sufficiently rotted was hard, thick, elastic, and remained clogged with parts of the stalk. We shall hereafter find these to be great defects when applied to the fabrick of cordage. We however acknowledge that hemp used in the finer fabricks may be a little more rotted, but it cannot be expected to render much finer a thread naturally coarse. It would rather be injured by putridity; for to have a fine thread the concurrence of many things are necessary.—First—The soil; for as above observed, too strong or dry a soil never yields a very pliant thread. It is too ligneous, consequently hard and brittle. On the other hand, if the soil is too humid, the bark which it will produce will be too herbaceous, tender, and liable to break, and become refuse, or heads of hemp. It is only the soft, substantial, and moderately moist grounds that give to the thread softness, flexibility, and strength, which are the best qualities of good hemp.

Secondly—The year. For when the seasons are dry and parching, the thread is hard. On the contrary, when the seasons are cool and moist, it is supple and sometimes tender.

Thirdly—The state of maturity. For if the hemp has been left standing too long, the longitudinal fibres of the bark adhere too strongly to one another; the coarse threads are connected like ribbands, and are with difficulty separated, especially at their lower extremities; which is understood when they say "a cue of hemp has many claws." This defect is found in all the female hemp that they have been obliged to leave too long in the ground in order to ripen its seed. Whereas if it is gathered in too green a state, the bark being yet herbaceous, great waste ensues, and the thread is without strength.

Fourthly—The manner of sowing the hemp. For that which is sown too thin has a thick, hard, ligneous,

and knotty bark; whereas that which is sown thick, has a fine and smooth bark.

Lastly—The preparations it undergoes after it is gathered; such as breaking, swingling, combing, &c. &c.

The preceding article on the culture of Hemp, and an article on the same subject, in No. 15, Page 229, have been deemed of so much importance, as to be sent to this country from Europe, by one of our public Functionaries. They are evidently, however, adapted to different climates, and disagree in several particulars.—To mention no other instance, the one recommends the sowing of the seed between the 20th of May, and the end of June, whereas the other directs that it be sown in the course of April. If this latter period is not a mistake in the original writer, it is certainly too early in the season for by far the greater part of the United States. There are many skillful cultivators of Hemp in Pennsylvania, Maryland, Virginia, Kentucky, &c. of whom some have published, for the information of their Fellow-Citizens, the result of their observations and experience, and the Editor is happy to have it in his power to extract from the Federal Gazette of Baltimore, a short piece, which may be read with profit in connection with those mentioned, above.

HEMP.

The increasing cultivation of Tobacco in Germany, France and other parts of Europe, must lessen the demand from our country; and consequently induce the cultivators of that article to turn their attention to some other production. Wheat, Barley, Rye, &c. will always be in demand, for exportation, or the distillery. We have also Flax and Hemp, necessary articles for internal manufactories. Flax is but a precarious crop, whereas Hemp seems the most certain of any spring crop, as well as the most profitable. The soil for Hemp should be

rich, light, deep and moist; but not spouty, or wet. Land that bears strong Tobacco, will produce good Hemp. Old ground well manured brings the heaviest crops, for according to the strength of the soil, will the produce be, from 5 or 6 to 12 or 15 cwt.

The season for sowing Hemp in our latitude, is from the beginning of May, to the last of June. It is necessary that the ground intended, should be in the best order, early in May, that the first favorable season that offers, for sowing the seed may be embraced. This is previous to a warm rain, or as soon after, as the ground will admit. When this is in fit order, and weather warm, as few seeds vegetate quicker, it will appear in 48 or 60 hours, which not only preserves it from the birds, but by its spreading leaf shelters the soil from the scorching sun. Should a fit season for sowing, be protracted, it becomes necessary, by stirring, to keep the weeds under and the soil in order. The quantity of seed for an acre, when intended for cordage, is from one bushel to six pecks, according to the quality of the soil; the richest requiring the most seed, which prevents the Hemp from growing too high. But when Hemp is intended for domestic purposes, two bushels or even a little more is requisite, which renders the fibre fine, and little inferior to our country flax.

Hemp is male and female, in different plants. The Farina or dust, emitted from the flowers of the male plant, is necessary to impregnate the female flowers, to render the seed productive. The proper season for pulling, or what is far preferable, cutting the hemp, is from the beginning to the end of August.—This period is sufficiently ascertained, from the appearance of the male plants, as when nearly fit to cut the blossom becomes of a pale yellow colour, and emits, upon the least touch or motion, a dust, which in the morning, appears like a fog rising from the Hemp, and when this blossom and the upper leaves of the male begin to fall, the Hemp is fit to cut—which should be done close to the ground

by a hook formed for the purpose, of the best steel, and as broad as a sickle, but not so crooked, and the edge smooth, with a set of about an inch just where the shank is formed that runs into the handle, which sets the edge lower, and prevents the necessity of stooping too much in cutting the Hemp. In gathering, it is supported by the left arm and knee, and spread regularly on the ground, as is done with flax. In about six or eight days, if the weather prove dry, it is bound up in bundles, and carefully preserved from the weather, either in sheds or stacks, until about the middle of December; then carefully spread out on grass land. The time for rotting will depend on the weather. In an open and mild season it will be sooner affected, and should be examined towards the middle or end of February. When sufficiently rotted, it should be set up in stacks in the field; and when perfectly dry the hemp brake should be brought, and as one stack is broke it should be carried to another: this brake is generally about four feet and an half long; the pieces in front being about four inches apart, and an inch behind: As the Hemp passes through this brake it should be carried home, where it must pass through a flax brake; when, after the shives are cleared off, it is rolled or twisted up in handsfull, turning in the loose ends, and bound up strongly in two or three places into bundles of fifty or sixty pounds; then it is fit for market.

A top dressing of ashes or plaister will prove of considerable advantage to the crop.

The best and most convenient mode of raising seed is to drop a few grains in hills, about five or six feet apart, which may be done in the hills along with corn in planting. They should afterwards be thinned, leaving three or four in a hill; and when the male plants begin to decay, they should be cut out.

Pipe Creek, 14th March, 1811.

LUCUBRATION ON SOILS. No. 3.....

The third great shelf or region, we have called the hilly or tideless region,‡ which begins at a line drawn from the head of tide water, and extends to the foot of the mountains, presenting a very uneven surface, but by no means incapable of cultivation, and comprehending an immense range of soils, no less various than those in the alluvial region. Here the gravel of the alluvial region, has assumed the full size of what may without hesitation be called stone; and the marl which in the alluvial region, is found upwards of 20 feet under ground, may here be seen in many places consolidated into lime-stone and marble, shewing itself above the surface; the washing of ages having worn and carried away the soil that once covered them, to the depth in which marl is found. Here the complexion of the soil is no longer of that pale and faint colour, which is observable in the greater portion of the alluvial region, which is given to it by the coat of decayed vegetable matter, washed clay and sand which form its surface, and were deposited in the manner we have already described; but, in the hilly region, the greater part of this upper stratum has been washed away, and presents a surface that has been more deeply coloured with age. The colours are various according to circumstanes, and the strata which have been uncovered.

The silicious part of the soil in this region, instead of being found in a great state of division, as in fine sand and fine gravel, such as generally prevails in the alluvial region, and particularly in the first shelves of the land as we ascend from the mouths of the great rivers that empty into the ocean, here presents itself in a more concentrated state, in the form of large stones. The argil of this region is also more pure, that is, less mixed with other substances, more firm and frequently ochreous. These

‡ Mr. Volney and other naturalists, include it in the alluvial.

circumstances cause the soil to be of a firmer and more retentive quality, as is required by reason of its elevated and uneven surface.

Another trait which distinguishes this from the region we have denominated alluvial, is easily observable; I mean the size of the forest trees. In the alluvial region, more especially in the first division of the alluvial region, the soil is looser to a greater depth than in the hilly region, and therefore the roots of the trees can penetrate more easily, and to a much greater depth than in the hilly region, where the first or upper strata, which by the laws of gravitation are generally the lightest, have in the course of ages been worn away with the rains and the torrents, and brought to the surface a soil more impenetrable, especially at a small depth under ground. Besides, the substratum in the hilly region, and particularly in the mountainous region, of which we shall speak in the sequel, is frequently rock of various kinds, chiefly sand stone, lime-stone, marble, schisus, and granite. These rocks in the hilly region are found but a few feet under ground, and frequently project above the surface. The trees, therefore, meeting with these obstacles, are not in general so large as in the alluvial region. In the vallies of this region, however, there frequently is found a soil of sufficient depth to admit of the growth of the largest trees. I do not wish to be understood, that the fertility of the soil in these regions, differs in proportion to the size of the forest trees.—No, it is a remarkable fact, that many tracts of country in the hilly region, that are covered with trees of slender and inferior dimensions to the trees generally found in the alluvial region, are extremely fertile in small grain; and in Virginia and Maryland, grow good Indian corn, though the stalk is not generally so large as in the alluvial region. The reason is that the soil is firmer, more impermeable and retentive, and yet not deficient in natural riches. The surface to a sufficient depth for the growth of grain, may, by being sufficiently pulverised by cultivation, be rendered completely adapted to the growth of grains, grass-

es and shrubbery, and all plants whose roots do not extend very deep, like the roots of forest trees. The rocks on which this soil is bedded, and which in this region project above the surface, are generally found in regular strata, and shew signs of having been deposited by the water, in ages when they were bathed by the ocean. The calcareous rocks, viz: Lime-stone and marble, appear to have been banks of marl, whose shells have had sufficient time to pulverize completely, and to agglutinate and petrify; they frequently show the remains and impression of shells, in their interior and exterior parts, and are stratified in the manner in which the sea makes her deposits. The schisti appear to be depositions of vegetable matter, brought down either by the rains and torrents, and collected in vallies, or deposited by the ocean in strata. The form and impression, and sometimes the remains of vegetables are frequently observed in slate and pit coal; and the other rocks mentioned, appear to result from the earthy deposits of the ocean. The order in which these deposits are made, is sometimes deranged by the convulsions of nature; but they would in general form a basis for the classification and division of the soils of this region. My opportunities are too few to enable me to trace them with any precision, or to shew with sufficient clearness, the places which these respective rocks generally occupy in this region. But as nature acts upon invariable laws, with uniform regularity, there is no doubt that it may be done, and will be done, as soon as agriculture becomes an object of the first importance with the naturalist and the lovers of Science.

In this region there is less pine, less cedar, less resinous wood of any kind, than in the region herein called alluvial; more oak, more kinds of oily nut trees, which generally have very hard wood; but these last are more frequent as you approach the mountainous region.

SYLVANUS.

WORMS IN FRUIT TREES.

From the Archives of Useful Knowledge.

The following paper appeared in New York in the year 1808, and the directions given have been tried with various success. Injurious insects are multiplying so fast among us, owing to the negligence of the farmers in destroying them, that any remedy, likely to succeed only partially, is worthy of attention.

The re-appearance of those armies of Caterpillars which infested, and even destroyed, so many of our fruit trees last summer, has this year induced me to make the following experiments:

1. On a young apple tree, at the bifurcation of the first limb, I made a moulding of clay mortar, (about 14 days ago.) On the 3d day, I observed an unusual commotion of the worms; and that they appeared weak, emaciated, and their bright colour much diminished, appearing of a foxy brown. Some of them attempting to descend, when they came to the projection of the clay, fell to the ground. Others, which I suppose had fallen, had re-ascended to the clay; but could not, or would not, pass it, though they appeared perfectly restored to their colour and size.

On the 5th day, I observed that their excrements, which before had seemingly filled the nest, had disappeared. On the 7th day, the nest also had disappeared, and the worms almost gone, except some dead ones, and a few small, emaciated ones, which were scarcely able to move. On the 9th, the clay being very dry, some fresh looking worms had made a lodgment on the clay, and formed a new web over it. These I displaced, and gave the moulding a coat of fresh mud. They are now entirely gone.

2. On a cherry tree in my meadow, where a vast number of those vermin had nested, and devoured all the leaves, I placed a sod, so as to encompass the trunk, and be supported by the first limb. On the 7th day, the nest

remained entire, but filled with dead worms, and but two or three living ones on the tree.

3. On a tree, similar to the last, I placed a sod in the bifurcation of the first limb, without making it to encompass either limb or trunk: on the 7th day, the worms on this were dead likewise.

4. Not satisfied with the foregoing unexpected results, as in the last experiment, I placed a sod, with the earth downwards, (as was the case before) in the second bifurcation of another tree, where I observed a considerable collection of worms on the trunk; but none that I could see had as yet ascended to the limbs: and this morning I observed that they had eaten many of the leaves on the first limb, below the sod; and were ascending in considerable numbers to it. None appeared on the rest of the limbs, though there is room enough for them to ascend without touching the sods.

I do not feel myself warranted in saying that such success will invariably follow this method of preserving our fruit trees; but the experiment is so easily made, that I think it well worth public attention.

N. C.

Whitehall, May 27, 1808.

COMPOSITION FOR HEALING WOUNDS IN TREES.

From the London "Repository of Arts, Literature, Commerce, Manufactures, Fashions and Politics, for March, 1809."

I have great satisfaction in submitting to my readers the following communication from Earl Stanhope, a nobleman, whose studies have been invariably directed towards the advancement of those branches of useful science, which tend more particularly to promote the welfare of mankind in general.

To the Editor of the Repository, &c.

Berner's Street, Feb. 13, 1809.

Sir,

The subject mentioned in your letter to me of yesterday's date, relative to the healing of wounded trees, is

certainly very interesting; I will therefore (agreeably to your wish) inform you of my success, and in what manner I have obtained it.

The injury which is done to timber trees, and other trees, from the loss of large branches, occasioned by wind, or otherwise, is much greater than people in general are aware of. Every attentive person may easily perceive the local injury which takes place at and near the wound, where the tree becomes evidently rotten; but there is, in addition thereto, a general injury to the tree, which is produced in the following manner. When wet gets in at the wounded part, it finds its way downwards, between the solid wood and the bark, through the capillary intervals where the sap rises. As the wet, so introduced, cannot get out, it frequently tends to cause the bark to decay at the bottom of the tree, just above, or at the top of the ground. The capillary attraction which causes the sap to rise, grows gradually weaker; the tree gets sickly; the tips of its upper boughs become rotten; and that fresh injury lets in more wet, which hastens the general decay: so that timber trees of the first size sometimes become hollow, or otherwise unsound, though the whole injury originated, perhaps, from the loss of a single large branch.

To remedy these evils, I have applied to the wounds a composition that I discovered many years ago, and which, when properly used, has succeeded even beyond my expectation; for not only the bark grows over the wounds, gradually pushing off the composition, but even the white wood, as it is commonly called, grows under the new bark, so as to produce a radical and a complete local cure. Whether the local cure thus accomplished, will, or will not, stop the general decay, which proceeds from the united causes I have alluded to, will depend upon the degree of general injury that the tree had received previous to the composition having been applied, and likewise on the number of small branches, or boughs, broken off; inasmuch as a tree can receive, in the man-

ner I have described, the same degree of general injury from several broken boughs, as it may from the loss of one branch of the largest dimensions. Wounds of an uncommon size in the bark of the trunk of the tree itself, have been completely healed by the same means. I have tried this plan on a great number of different sorts of trees, and I have always succeeded, if the composition was properly applied, and in due time: one application of the composition will frequently be quite sufficient, but some trees require it to be applied more than once. The elm, when very vigorous, is, generally speaking, of the latter description, on account of the great quantity of sap which weeps from its wounds, especially when the wounds are of a considerable size.

Oak, beech, chesnut, walnut, ash, elm, cedar, fir, asp, lime, sycamore, and birch trees, are, by an act of parliament of the 6th year of his present Majesty, deemed and taken to be timber trees; and by an act of the 13th of the king, poplar, alder, larch, maple, and horn-beam, are also deemed and taken to be timber trees. The trial has been made on the greater number of these seventeen sorts. as well as on yew, horse-chesnut, and apple trees, on various fruit and other trees, laurels, and shrubs.

If it be wished to saw the limb off, either close to the body of the tree, or near to it, great care should be taken that the separated limb, in falling, does not tear off the bark from the tree itself. This may be accomplished by first separating from the tree the greater part of the limb, and then taking off the remaining stump, and also by sawing the bark of the limb, completely all around before the wood itself is divided. If the limb be a very large one, a rope properly tied to it may be advantageously used, to prevent its injuring the tree at the moment of its being separated from it.

After the broken limb has been sawed off, the whole of the saw cut must be very carefully pared away, by means of a spoke-shaver, chisel, or other sharp tool;

and the rough edges of the bark must, in particular, be made quite smooth: the doing of this properly is of great consequence.

When the saw-cut is completely pared off, the composition hereafter mentioned must be laid on hot, about the thickness of half a crown, over the wounded place, and over the edges of the surrounding bark: it should be spread with a hot trowel. The most convenient tool for this purpose, is a trowel somewhat similar in form to those used by plasterers, but of a greater thickness (such as of a quarter of an inch) in order to retain the heat the longer.

The healing composition is to be made as follows:—Take, of dry pounded chalk, three measures; and of common vegetable tar, one measure; mix them thoroughly, and boil them, with a low heat, till the composition becomes of the consistency of bees wax: it may be preserved for use, in this state, for any length of time. If chalk cannot conveniently be got, dry brick-dust, which has passed through a fine sieve, may be substituted.

I am, Sir,

Your obedient servant,

STANHOPE.

REMARKS BY THE EDITOR OF THE ARCHIVES.

The composition of Earl Stanhope, is certainly preferable to the celebrated one by Mr. Forsyth, of lime rubbish, cow manure, and bone dust, which is objectionable from the nature of one of the ingredients, from the difficulty and trouble in making enough of the last mentioned article, and from the frequent renewal which it requires, in rainy seasons. Many suppose that there is some particular healing or medicinal property in the composition; but that is not the case; its efficacy depends upon keeping out the air and wet, and any other preparation capable of doing that, will answer as well as that of Forsyth. Mr. Bucknal, a celebrated orchardist,

who had the care of the king's garden at Hampton Court, recommended tar and corrosive sublimate: I cannot see the utility of the latter ingredient.

FROM THE AMERICAN DAILY ADVERTISER.

PEACH TREES.

It is a matter of much regret to an observer to notice the decaying state of the Peach Trees in the vicinity of this city, and the probable loss of that charming fruit, unless some method is fallen on to prevent the ravages of the worm, which is destroying the trees. This is the time to examine them, which examination should be repeated again in the month of October. There is no difficulty in ascertaining whether the trees have worms in them, they soon shew it by the yellow cast of the leaves and the sickly appearance of the trees; whenever a tree puts on this appearance, by examining the trunk near the ground, a glutinous matter mixed with the excrement of the worm will be found on the bark, at the surface of the earth or a little above. A sharp pointed knife should be immediately used and the worm cut out by tracing him through the channels he makes between the wood and bark, which will generally be found to descend towards the roots.

Various methods have been tried; and among the experiments made to destroy the worms, putting ashes and lime around the roots, have had their full share of trial without success. There appears to be no other mode to prevent the ravages of the worm, but to keep off the wasp and grey miller, who deposit the egg; in almost every instance it will be found that the worm begins at the surface of the earth, where the bark is moist and easily penetrated by the sting of the insect in its winged state. I may say that it is a general rule, with only this exception, that if dead leaves or any similar substance becomes attached to any limb, by retaining moisture af-

ter rain, the bark becomes soft enough and proper for the use of the wasp, who will use that part as well as near the root.

The following modes of preserving the peach tree have been found the most successful—while the tree is young, get from the potters an earthen pot, open at both ends; by compressing the limbs of the tree draw it gently over to the ground—sink it three or four inches below the surface, having it sufficiently long to raise eight or ten inches above the ground, fill this up with coarse dry sand, free from mixture of loam or clay; the pot should be about ten inches in diameter. Where pots cannot be obtained, dig the earth away from the roots for about one foot around the tree, and put in coarse sand being careful to raise it in the form of a mound for eight or ten inches. The advantages of the sand are that being of a dry nature, the bark becomes too hard for the sting of the wasp, and if it succeeds to perforate the tree, as soon as the worm begins to work, the sand rolls in after him and strangles him in his hole, besides these advantages it is a well known fact, that peach trees always grow best in a sandy soil.

Another method which has been found to succeed, is to tie a coarse linen or matting round the trunks of the trees, but this will answer no purpose unless the wrapper extends three or four inches under ground as well as above; to prove this, examine your trees and you will find that the seat of the mischief is from the surface to four or five inches below the earth.

Another reason why so many lose their peach trees is the neglect to trim them; they grow so very luxuriantly that unless they are properly trimmed, they quickly arrive at untimely old age; to trim the top into a round bushy form is best.

As this is the season for budding or inoculation, the writer of this would particularly advise the budding to be done on the quickest growth *plumb stocks*, which is the most certain remedy against the worm. Let the bud

be put in about five or six inches from the ground, which will prevent in a great measure the evil which may occur from the peach out growing the plumb stock; almond stocks will also answer well to put in peach buds

The writer of this would propose the following question, which he hopes to see answered: What is the best method of preventing the ravages of the Curculio or small insect, which stings and destroys the fruit of our peach and plumb trees just before it ripens?

A LOVER OF GOOD FRUIT.

DIRECTIONS FOR RAISING FLAX ON OLD GROUND.

From the American Museum.

Let your land run over with grass, until the month of June; then plough it in, and dung the ground with sheep's dung, or yard your sheep upon it; plough it eight or nine times more before winter. Early in the succeeding spring, plough it three times more, and at the last time, plough in your seed with some ashes, if you have any; roll a roller over the ground, to beat it down hard, and make it smooth.

To impregnate the ground with nitrous salts, and generate proper nourishment for the growth of the flax, let the ploughing be done early in the morning, before the dew is off by the exhalation of the sun. Wet land, where the water stands in the spring, or after a heavy rain, ought not to be ploughed until it is dry.

The ploughing of the land often prevents the generation of devouring insects. Part of the ground may be sown as early as the season will admit, and the rest at or near the full moon in May; you may expect a good crop from both parts; but if one should fail, you will, in all probability, have a good one from the other.

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OMNIS FERET OMNIA TELLUS. VIRG.

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LUCUBRATIONS ON SOILS.....No. 4.

The mountainous region comprehending the mountains and the intermediate vallies, is very extensive, and might undergo a variety of divisions and subdivisions, respect being had either to the surface, or to the different strata of rocks, ochres and metals which here abound, and form the bed on which this whole region rests. The surface might be divided into glades, slopes and vallies, and be styled sand-stone glades, schistous slopes, pyritous or calcareous vallies, &c. as those rocks, as ferruginous loam or till, or as iron or other metal prevailed. This region might also be called *Parent earth*; because it is the oldest and highest earth of which all new soils are formed. The soil in this region is closer, more impermeable and more retentive, than in the regions we have already described; because the laws of affinity and gravitation, and the other great laws of nature acting upon its component articles, have had time in the immense lapse of ages, to give them harder, purer, and more solid forms. Its sands have agglutinated and form rocks, its clays have been changed to ochres, to alumn, and transformed in various ways to other hard substances. What once were shells are here solid rock; its calx and sulphur are converted into metals, and its ligneous and vegetable substances, into pit coal and slate. If it was not for the retentive and impermeable properties of these solid substances, and the adhesive texture of its soil, the obliquity and elevation of the surface, would not permit it to retain a sufficiency of moisture for the purposes of vegetation, and

the whole would become a barren waste. The adhesiveness of the soil counteracts the uneveness of the surface, and is justly proportioned by the hand of its bountiful creator, to the purposes of vegetation. This region partakes somewhat of the qualities and appearance of the hilly country, and has lost all superficial traces of the alluvial. The rocks, which in the hilly region only shew their projective points, and can only be partially observed and remotely traced, time having worn and carried away all the looser and lighter substances, which compose a large portion of the surface of the alluvial region, and the covering of the rocks in the hilly region, has here laid bare, and masses of rock stud the whole face of this country. The earth is also in many places almost covered with its fragments, which communicate to the soil various qualities, and many times great fertility. The fertility of the soil in this region depends also greatly upon the form of the surface, as is easily conceived in so elevated and broken a country. Vallies sufficiently level for all the purposes of cultivation, and of considerable extent, are interspersed among the ridges of mountains. These monopolize nearly all the riches of this country, the mountains being too steep to retain them in any quantity. There are portions of this region which, notwithstanding their great elevation, enjoy a source of moisture and fertility peculiar to their situation,—I mean the glades which by reason of their elevation, being cooler than the country below, gather the mists rarefied by the heat in the vallies and on the slopes of the mountains, and are in consequence, watered during the summer months, with continual light rains and fogs, while the country below them is parched with drought and heat. Such is the tract of country beyond Fort Cumberland in Maryland, called the Green Glades, which abounds in excellent pasturage. All glades do not however possess this advantage.

The observation made with respect to the size of the trees in the hilly region, is more applicable to the mountainous region; because the soil is still closer, and the rocks lie still shallower: In some of the vallies however, where the mould and vegetable substances from the mountain steeps, have been obstructed and gathered many feet in depth, trees of enormous size are found. The trees which prevail in this region, are those which delight in a high, dry, firm soil. These vary in their kind and species according to the fertility of the soil in this region. The growth of the mountain steeps is very different from that of the dry vallies. On the steep sides of the mountains and parched summits, stunted oaks and meagre starveling pine is the prevailing growth. In the vallies you find all kinds of oily nut trees, of hard wood, viz. hickory, shell bark hickory, white wallnut, hazzle nuts, also ash, beach, wild cherry, maple, poplar and locust, which last prevail most in calcareous vallies.

My opportunities will not allow me to assign to each kind of tree mentioned, the part of this region in which it most delights. This much is ascertained, that they prevail more in the mountainous region than in the other regions already described.

With these few generalizing observations upon the classification of soils, and with this imperfect description of the regions we have enumerated and attempted to bound, I shall leave that part of the subject, and go on, in my subsequent numbers, to complete the promise which I made in the preliminary remarks to this essay. If I do not so regularly hereafter furnish my numbers, I hope the busy season of the spring will palliate my omission.

SYLVANUS.

NOTE.

I first hazarded stating the idea of trees succeeding each other in consequence of the change of the soil, in my second number and afterwards as the subject of trees ocurred, upon my own observation and the observation

of some old men of my acquaintance. A few days ago, I for the first time, met with the memoirs of the Philadelphia Agricultural Society, which from various sources and high Agricultural authority, establishes the fact in a manner, not to be doubted. The honorable Richard Peters labors the subject handsomely, and has collected a great variety of letters and extracts to prove the circumstance. My idea of the regular, gradual and uniform course of nature in the change of soils, being the great and leading cause (though certainly not the only cause) of the succession of trees, seems not to occur to Mr. Peters or any of his highly intelligent correspondents. He labors to prove by the analogy of trees, the necessity of a succession of crops. This no doubt is sound argument, and among the best modes of establishing the necessity of a change; but let the change be made with sound discretion according to the nature of the plant and of the soil.

Here follow some Extracts on the subject, very much in point, to prove the Succession of Trees.

Extract of a letter from JOHN ADLUM, Esq. of Havre de Grace, Maryland, dated Sept. 16, 1807.

"As to your query respecting a rotation or succession of forest trees, I am as well satisfied of it in my own mind, as if I had lived to see the whole change for centuries back, and although it may be difficult to give the information that may be satisfactory, I have no doubt that I could convince any person as to the fact, were he to travel over the country with me. I first took the idea in the summer of 1788, when I was surveying lands south of the great bend of Susquehanna, between that river and the Delaware, in what is called the beech and sugar maple country. In the course of my surveying, I traversed some places consisting of a few acres each, growing red and white oak trees of an enormous size, none being less than 16 feet in circumference, five feet above the ground, and generally from 40 to 50 feet to the branches; some few red oaks were 22 feet in

circumference, and the white oaks 20 feet round. I was struck with astonishment to meet a few trees of the oak kind, considering that I had not seen any for some weeks. After discovering the first few, I kept a look out for more such places, and as well as I can remember, I found two more of the same kind, containing trees of the same enormous size. The places mentioned were near the heads of the Susquehanna and Delaware; and where the streams were small, I invariably found small bodies of very large hemlock (pinus Abies Americana) trees (the prevailing timber) near those places; the remainder of the trees consisted of beech, sugar maple, with a few white walnut, white ash, birch, &c. but no oaks."

In those parts of the country where the prevailing timber consisted of sugar maple, beech, and birch, I observed large trees growing as it were on stilts, their roots being three feet above the ground, which trees undoubtedly grew on old logs that had either fallen with age, or had been thrown down by hurricanes, and had rotted away from the roots of the trees.

"The clumps of oak and hemlock are generally in the midst of, or surrounded by, large bodies of beech and sugar maple, and mixed with some ash and a few wild cherry and hemlock trees. In some parts of the country, the prevailing timber is still hemlock on the sides of the hills and along streams.

"From the circumstance of the great size of all the oak trees growing in the spots noted above, it appears to me that most of the high country, including the head waters of the Delaware, Allegany, and Genessee rivers, was originally an oak country. The hemlock appears to have succeeded the oak, for there is still a considerable quantity of that timber over the face of the country, but from the number of logs of it lying on the ground, and its visible decline, I think the beech, sugar maple, &c. succeeded the hemlock, as they are the prevailing timber at present. The timber that appears to me will take

place of all others in the country before mentioned is the white ash and wild cherry, for I observed that all places where the woods have been blown down by hurricanes for a number of years back, the young growth consists principally of those two kinds of trees, and the largest saplins of them which I saw, were six to nine inches diameter. I suppose that the appearance of the latter trees commenced between twenty and thirty years back, counting from 1794 or 1795. There are several of those wind falls in the remote parts of Pennsylvania and New York, near the line dividing the two States; they are generally 1-8th rarely 3 4ths of a mile wide, and several miles in length, and in every one that I saw, and that did not appear to have happened more than from 20 to 30 years back, the ash and wild cherry were the prevailing timber."

Extract from a publication of Rembrandt Peale.

"Many of the cavities between these knolls are dry, others are in a state of ponds, but an infinite number containing morasses, which must originally have been ponds supplied by springs which still flow at their bottoms, and filled in the course of ages with a succession of shell fish, and the decay of vegetables; so that at present they are *covered with timber*, and have been so with in the memory of man. An old man, upwards of sixty, informed us, that all the difference he could remark between these morasses now, and what they were *fifty years ago*, was, that then they were generally COVERED WITH FIRS, and NOW WITH BEECH. This was verified by the branches and logs of fir which we found in digging.

"Judge Peters corroborates the fact in a variety of ways. Among other things he says, "My son also brings to my recollection, that when we surveyed the tract, called in old times the *pine Tract*, in Northampton county, a great number of ASH TREES were intermixed with the present growth of oak and hickory."

Dr. Caldwell observes, in a letter to Judge Peters. "The following fact I believe to be well known to many of the

most reputable inhabitants of New Jersey. Certain tracts of that state are covered entirely with forests of pine. If these be cut down, and the land not put immediately under cultivation, they are succeeded in a few years by a plentiful growth of young oaks."

I feel gratified in being able to adduce such strong auxilliary testimony.

SYLVANUS.

ON MANURES.

As manures cannot always be procured in sufficient quantities to dress all the land the farmer would wish, I will put him in a way, from my own experience, by which, with a few shillings, and a little labour, he may dress an acre of land, or as many as he pleases.

In sands and gravels, buckwheat ploughed in while green, is a good dressing. The land should be ploughed in the fall, and laid up in ridges, to bring the land into a fine tilth; harrowed and ploughed in the spring; and in the beginning of May should be sown with a bushel and a half of buckwheat, and harrowed in. In July, when in full bloom, it should be well rolled and ploughed in, in broad lands. When this is done, there will some appear above ground, between the furrows, that the plough did not cover. This must be stuck down with an iron instrument, like a paddle or paving shovel; and let it lie in that state for a month.

In this time it will smoke so as to be seen a great way, like a dunghill, and as it is a green dressing, it will quickly rot in the ground. The next thing is to harrow it in; then plough and sow wheat in broad lands. If you have a good crop of buck-wheat, it will be a good deessing for three years.

This great improver of land is such a friend to the farmer, that if its value was more generally known, this method would be more practised.

Clover ploughed in, is a good green dressing. You may mow the first crop; and if you have a good second

crop, do not be afraid of ploughing it in, as it will fully repay you in your crop of wheat. It should be rolled and ploughed in the same way as the buck wheat. After it has lain some time to rot, you may harrow in your wheat, for it should not be ploughed again as directed for the buckwheat.

Thorough ploughing, in a great measure, supplies the want of manure, by keeping the earth in a loose state, ready for the reception of atmospherical influence.

It is much more profitable to increase the fruitfulness of land by tillage than by dung; because only a certain quantity of dung can oftentimes be had, the produce of ten acres, being scarcely sufficient to dung one; whereas the particles of the earth may be divided and subdivided. The benefit that can be procured from dung is therefore limited; whereas, no bounds can be set to the advantages which arise from tillage.

Mr. Evely, quoting Sir Hugh Platt, says, that if you take a certain quantity of even the most barren earth you can find, reduce it to a fine powder, and expose it for a year to the vicissitudes and changes of the seasons and the influences of the heavens, it will acquire such a generous and masculine pregnancy, within that period, as to be able to receive any foreign plants from the farthest Indies, and to cause all vegetables to prosper in the most exalted degree, and to bear their fruits as kindly with us as they do in their natural climates.

We are to suppose these foreign plants to have their due degrees of heat and moisture given them. To what shall we ascribe this great fertility? To the great division of the particles of the earth, and the multiplication of their surfaces.

By thus pulverizing the earth, adds he, it is found that soils may be so altered from their former nature, as to render the harsh and most uncivil clay, obsequious to the husbandman, and to bring forth roots and plants, which otherwise require the lightest and hollowest mould. [*Pennsyl. Farmer.*

Richmond Agricultural Society.

At a meeting of the Richmond Society for promoting Agriculture, held on the second instant:

The corresponding Committee, who were required by a resolution of the last meeting, to make a report specifying the particular objects to which the attention of the Society should be directed, and the best means of obtaining information thereon, did, in conformity to the said resolution, submit to the Society, a number of queries; which being read and considered, were, after some amendments and additions, approved, and ordered to be published.

They are now published, under a hope, that the persons qualified to give information on any of the subjects to which they relate, will consider themselves as individually called on to communicate to the Society, for the public benefit, the results of their observation and experience.

The object of the society is to collect from every quarter and to diffuse all the information which has a tendency to promote the Agriculture of Virginia. It is well known that there are in various parts of this state, individuals distinguished for their industry, skill and success, in the cultivation of the earth. Knowledge however can be imparted by oral communication but to a few; and the beneficial influence of individual practice, however judicious and profitable, must be confined within very narrow limits—To remedy this evil, the society proposes to collect all the practical Agricultural knowledge of the country, and to convey it to the public in the way which may be deemed most conducive to the general welfare. In this undertaking they call for, and confidently expect, the aid of all whose studies and labors enable them to add to, or improve the public stock of Agricultural information.

GEORGE HAY, Sec'ry.

April 7, 1811.

QUERE

1st. The best mode of restoring worn out land, filling up gullies, and bringing it in order for the plough.

2nd. The best rotation of crops in which Indian corn, wheat and clover are included.

3d. Do. In which tobacco, wheat and clover are included.

4th. Do. for a sandy soil including Indian corn.

5th. Do, for a clayey soil including wheat.

6th. The best rotation of crops, for new lands, with a notice of the particlar soils.

7th. The best mode of preventing lands under the plough from washing.

8th. The comparative advantages and disadvantages of the two systems, that of inclosing for the purpose of excluding stock, or keeping a large stock—which will produce the greatest annual profit, and which will tend most to the improvement of the soil.

9th. The best method practicable on a large scale, of bringing exhausted lands into a condition to bring clover.

10th. The best mode of clearing new land, and bringing it in order for cultivation.

11th. How are broom-straw old fields best brought into cultivation; how is the broom-straw most effectually eradicated, and reduced into manure.

12th. The best rotation of crops for river low grounds, in which wheat, corn, and clover are included.

13th. Is there any ameliorating crop that can be cultivated between a corn and a wheat crop with advantage.

14th. The comparative advantages and disadvantages of wheat and tobacco as the principal crop, taking into account, in each case, the distance from market.

15th. Whether Indian corn can be cultivated year after year on the same land with advantage, and to what species of soils is this mode of cultivation best suited?

16th. The best method of preparing land for Indian corn and cultivating it.

17th. The most effectual mode of protecting Indian corn, after clover lay, from the worm.

18th. How is wheat most effectually protected againt the Hessian fly.

19th. The advantages and disadvantages of deep ploughing, and what soil is it best suited to?

20th. Do. of Coultering.

21st. The comparative advantages of fall, winter, and spring, ploughing for Spring crops.

22nd. A rotation of crops in which annual leguminous plants follow Indian corn and precede wheat.

23d. Which is the best preparation for wheat, a fallow or clover lay.

24th. The best method of securing wheat against the weevil.

25th. Is there any annual leguminous crop that can be cultivated to advantage upon a large scale in a rotation of crops.

26th. Can Barley be cultivated to advantage on a large scale in a rotation of crops—To what soils and situation is it best suited.

27th. Which is to be preferred, winter or Spring Barley, and in what parts of the country.

28th. On what lands and in what courses of crops can oats be cultivated to the greatest advantage.

29th. What varieties of wheat are preferred in any particular district; to what soils are they respectively best suited.

30th. Do. as to Indian Corn.

31st. A notice of the diseases of wheat that are most injurious, the preventatives and remedies.

32. What species of grain is found to exhaust Lands in the greatest degree, and a comparative estimate of the expence of cultivation and product.

33 In what soils and situations can Rye be cultivated to the greatest advantage; in what mode, and in what rotation of crops, and what is the most profitable application of it.

34th Will Rye yield a profit if sown in the Autumn, and fed off in the Spring; and to what species of stock is it best suited?

35th. The soil and culture that are best suited to hemp, the expence and product.

36th. A detailed account of the whole management of hemp, from the preparation of the ground to the dressing it, and preparing it for market—an estimate of the expence and product.

37th. Do. as to Flax.

38th. Ditto as to Cotton.

39th. The best mode of draining swamp lands, and converting them into meadow.

40th. How are watered meadows best formed, and what soils and situations in the middle and lower country can be improved in this way with advantage?

41st. Is there any method by which lucerne, clover, or land under tillage, can be watered with advantage, in those districts of country?

42d. Are embankments practicable on an extended scale on the larger rivers, above or below tide water, and the mode of forming them?

43d. What green food is best suited to cattle in the winter, and early in the spring, which will best answer the expence of cultivation?

44th. Have lucerne, saintfoin, vetches or cichory, been cultivated by any person to a considerable extent, and with what success?

45. Ditto as to cabbages, parsnips, carrots and pumpkins, in a course of field cultivation for the use of cattle.

46th. What soils and situations are best suited for turnips; which is the best mode of cultivating them for the use of stock on a large scale; how are they best preserved, and which is the best application of them.

47th. Which is the best method of securing a large crop of clover Hay.

48th. To what kind of stock is it best suited.

49th. The forming and management of timothy meadows; will they succeed in the lower country, and under what circumstances.

50th. Are there any other meadow grasses that are to be preferred to timothy, and in what soils.

51st. Will burnet answer when cultivated on an extended scale; what soils is it best suited to; how is it to be cultivated, and what is the best application of it.

52nd. The comparative advantages and disadvantages of the use of horses and mules in husbandry, and the soils and situations to which they are respectively best suited.

53d. Do. of horses and oxen.

54th. The best preventatives and cure of the diseases among horned cattle called the bloody murrain—the history of its origin and progress in this country, and whether it is more contagious in one district than another.

55th. The causes and cure of the disease among Horses called the yellow water—Is it contagious, and under what circumstances.

56th. The diseases of sheep how are they best guarded against and what are the remedies.

57th. The best breeds of cattle, sheep or hogs in any particular district, are there any situations to which they are better suited than others—and is there any particular system of management to which the different breeds are respectively best suited?

58th. The best means of increasing the stock of sheep. To what soils and situations are they best suited?

59th. The most advantageous mode of raising and fattening hogs within inclosures.

60th. Will the practice of shutting up cattle, and supplying them with green food in the growing seasons, instead of turning them out to pasture, answer in this country? Has the experiment ever been tried, and to what situations is it best suited?

62d. The most beneficial application of Plaster, and to what soils it is best suited.

61st. The quantity of plaster sufficient to manure an acre—How often should it be repeated; with a specification of the soils to which it has been applied.

63d. Is there any species of fossil manure that can be found in large quantities in the Middle Country, and that can be used to advantage.

64th. Is marle (properly so called) to be found in the upper country, has it ever been used as a manure, and with what success.

65th. Has marle ever been used in the lower country. Have the strata of shells that abound there ever been found beneficial as manure?

66th. Will Green Crops raised and turned in by the plough improve the land, and will the improvement be equal to the expence—What plants are best suited to this purpose, and the mode of cultivation?

67th Which is the best method of turning straw, and corn stalks into manure?

68th. How is the greatest quantity of manure to be obtained from Stock in the winter, due attention being paid to keeping them in order?

69th. Is the practice of folding cattle and sheep in the Summer, on the whole, advantageous or otherwise, and what are the particular advantages, or disadvantages of it, as wellwith reference to the stock as the land; to what soils is it best suited?

70th. The best application of manure in a rotation of of Crops in which wheat and indian corn are included.

71st. Do. where tobacco and wheat are cultivated—due attention being paid to the nature of the soil in each instance.

72nd. Is manure applied with most advantage in a fresh state, or after it has gone through a fermentation?

73d. The best mode of raising large quantities of manure from fattening Hogs—Can straw be used for litter in large quantities without injury to the hogs?

74th. Are farm pens for stock in the winter on the whole beneficial, and what is the best plan for constructing them?

75th. Does plaster when combined with other manures remarkably increase their effects?

The best management of Orchards

76th. Do. of a Dairy Farm—is the Dairy a profitable object to be attended to on a large scale, and in what situations?

77th. Whether Arable Lands can be converted into grazing farms with an increase of profit and in what situations?

78th. The kinds of ploughs that are used in different districts, are there any lately introduced that have peculiar advantages, and what are they?

79th. Do. as to Threshing Machines, Waggons, Carts and Implements of Agriculture in general.

80th. The best mode of extirpating the Wild Garlic, and other troublesome weeds.

81st. What improvement can be made on our present inclosures—Can live hedges be raised, from what plants, and will they form a sufficient fence—To what soils and situations are they best suited?

82nd. A source of any improvement in husbandry or the management of rural affairs in any district.

83d. Whether in any particular part of the country the system of husbandry is improving, and in what the improvement consists?

84th Do. whether it is declining, and in what respect.

The quantity of seed, wheat and other small grain proper for an acre, with a reference to the soil and time for sowing. Do. of Clover Seed.

[*Enquirer.*]

Numerous as are the above QUERIES, the greater part of them are nevertheless highly important. It is hoped they will attract the attention of the practical Farmers and Planters of our Country.—The Editor will be happy to afford a place to their Lucubrations in the *Agricultural Museum.*

POTATOES

Preferable to a Summer Fallow for WHEAT.

Extract of a letter from the Revd. Samuel Austin, of Worcester, to the Editor of the Medical and Agricultural Register, dated Worcester, (Mass.) February 24, 1806.

"There is one species of husbandry, not in general practice, in which I have made some experiments with

considerable success; that is, to substitute a crop of potatoes in the room of a summer fallow * as a preparation for Wheat. Wheat is doubtless the best and most profitable grain that can be raised. No species of vegetable adds so much ornament to a country, and none affords a more essential or grateful part of that aliment by which human nature is preserved. The potatoe also is a valuable root. For the horse it is an excellent and healthful substitute, for the green grass which he crops in his summer pasture, and seems nearly indispensable to be united with his dry winter fodder, to preserve him from those diseases to which he is so exposed in the cold season. Every intelligent farmer knows its value for feeding his swine, his sheep and his cattle; and no crop is more sure or more easily raised; none is so plentiful. Warm, loomy land, and such is the greatest part of this Commonwealth, well manured, will yield three hundred bushels to the acre. They may be taken off, if planted in season, by the middle of September, and the ground will be in the best situation to put in immediately a crop of wheat. This is altogether better than summer fallowing, and the crop of potatoes is a clear saving. I have in this way, had 25 bushels of most excellent winter wheat on the acre. I have now a piece of land under wheat according to this mode of management, which is of so promising an appearance as to be noticed with special attention by my neighbors.—The land ought to have an early fall ploughing, if under a binding sward, and the potatoes should be hoed twice. If this mode of agriculture should go into general practice, the probability is, that it would add materially to the prosperity of our country.

* Summer tilling; or letting land rest from one crop without being seeded.

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For the Agricultural Museum.

ON THE CULTURE OF FLAX.

HAVING observed several articles in the Museum, on the Cultivation of Hemp, and its preparation by the Agriculturalists to render it marketable, I send you in detail the Management of the Flax Crop in the North of England. Whether the same course is pursued there, with that followed by the Irish, or in Germany, I cannot say—or even whether the one I have observed be among the best; yet, as it is followed in a district of country where the manufacture of linen (particularly the strong and serviceable kind) is carried on to a considerable extent, it may therefore be not unacceptable to some of your readers.

A deep and rich loam, or that kind of soil which often marginates rivers, and appears to have been formed by the deposition of their waters, is generally preferred to all others for this crop; and indeed it is seldom found to answer the farmers expectation when sown upon other land. Land which has lain for some years in grass is accounted the best; it is not unfrequently, however, sown upon arable land, when the soil is good, dry, and friable, and free from weeds. The kind cultivated is the linum usitatissimum, and of that variety termed the blue or lead coloured. Whether sown upon land that has been in grass, or upon wheat stubble, it seldom receives more than one ploughing; altho' good management would direct that if sown on arable or cultivated land, it ought to be well pulverized and freed from weeds by a previous fallow. The land is seldom if ever manured immediately for this crop, probably from the fear of introducing a fresh stock of weeds so detrimental

and injurious to it. The time of sowing is May, the particular time depending much upon the season, and state of the soil, which should neither be wet nor dry, but when the surface can be reduced as fine as that of a garden bed; every clod the size of an egg ought to be broken, for much of the value of the crop depending on the regularity of the seed vegetating, too much attention cannot be had to weed on putting it in. Two bushels of seed are usually sown upon an acre—the seed covered by the harrow, and in some cases, the larger lumps or clods, are by garden or hand-rakes drawn into the furrows. Weeding is an operation which ought to be, and there, is carefully performed, and on which much depends; hence the care as to the state the land is in, which is sown with the crop. A dry season after sowing, sometimes causes the plants to come up in two crops, in which case, or when by mismanagement the crop is too thin on the ground, it is irreparably injured; for such is the nature of this plant, that wherever it stands uncrowded, at the root, wherever it raises its head above others which surround it, it shoots out lateral branches, and loses its upward tendency. The goodness of the crop on the contrary, depends upon the plants rising evenly with only one stalk or stem, from the root to the seed; for at whatever height it ramifies, there the length of the *line* or flax fibre terminates; the branches being worked off in dressing. A full and even crop upon the ground, is therefore desirable, to obtain which every due precaution is taken, such as sowing a full quantity of seed, harrowing the land fine, and breaking those clods, which cause the seeds that fall upon them to rebound, and form a circle round it, leaving a vacancy in the centre, which encourages an early ramification in the plants. Hence, arises the disadvantages from a second vegetation, where those plants which are most forward, overtop the others, shoot out their side branches, which injure the under growth, as well as the plants which bear them. The young plants being very tender, and liable to

be injured by Spring frosts, will cause the Cultivator to be more attentive to the advance of the Season, than the *time* of sowing; judging, as it is prudent in many other cases, by the progress of vegetation in trees, or shrubs which are slow in foliating. Should not the crop of Flax promise well at the time for weeding, the farmer seldom bestows that expence upon it; believing it better to sow the ground in Turnips, or some other crop, which the season admits of being substituted in lieu thereof.

The flax crop is there usually fit for pulling towards the end of the month of July, or early in August, somewhat depending on the quality of the Flax wanted. The *line* being best when the Flax is pulled after the seed is completely formed, but before it is ripe. If the Flax is suffered to stand until its seed is matured, it is of an inferior quality; the fibre is harsh, and the linen manufactured from it neither bleaches with the same facility, nor acquires the same degree of whiteness with that pulled earlier.

They reap, or more properly *pull* the Flax, by grasping the full sized plants in one hand near the top, and, either pulling them up, or breaking them off near the roots; the other hand receives the handfuls as pulled, until as much is gathered as both hands can hold. Some of the short or underling Flax is then pulled, and formed into a band for binding these small sheaves. After this the small sheaves are collected together and carried to the watering pit, in which they are completely immersed and trodden down, after which they are covered with sods or turf of grass, or any thing which will admit of being loaded, for the purpose of keeping the Flax covered by water. This is a process which requires great care and management, for if it is suffered to rise above the surface of the water, the quality of the Flax is considerably injured. The time which they suffer Flax to lie in the pit depends on the state of the weather, the kind of water, or other circumstances. It must lie until the stem is rotten, but whilst the fibre of the bark remains uninjured, which requires frequent trials or

handlings, and, as it is said, much skill to ascertain: indeed they say that long practice alone can enable a person to judge correctly on this point. In that climate however the steeping usually continues about ten days; sometimes extending to a fortnight.

From the pit in which it has been steeped, the Flax is removed to a meadow, from which the grass has been recently cut, where the sheaves are untied and the Flax evenly spread, so as to cover about as much ground as it was raised upon. Here it is suffered to lay until the woody substance of the stem, separates freely from the filaments of the Flax, the latter remaining uninjured. Hence this process termed "rating" like that of steeping depends much upon the weather, requiring the daily observation of an experienced Flax grower, to ensure the maximum of success. Should the weather be unfavorable to the drying of the Flax when sufficiently rated, which is frequently the case in that moist climate, it is gathered into small conical heaps, resting on its butt or bottom ends to dry. After this is effected, it is carried to the barn or other place where it is secured from the weather.

In preparing the Flax for the market it is necessary to separate the woody part from the filament, or exterior covering of the plant, of which the Flax consists. This is by an operation termed swingling, well known in countries where Flax is raised. In the part of England referred to, it is generally performed by persons following it as a business, and who travel from place to place for that purpose; and as they are generally well skilled in the quality of the article; they are also employed by the farmers to superintend both the "steeping and rating" of the crop. To effect this process of swingling, the stubborn stems are first mangled or broke in an instrument called a break; after which the woody part is separated from the long fibre by beating it over the edge of a stout board or slab, with a kind of wooden broad axe or sabre, formed instrument; and from time to time drawing out the tow, or broken filaments by means of a

coarse heckle. By this alternate use of the swingling knife, and heckle, most of the woody fragments, here called shive or shivers, are got out, part of the tow or broken filament removed, and the article got into a state, fit for the Flax dresser and folded into bundles for sale.

FRANKLIN.

Wheat has for many years been a very considerable article of husbandry in the United States. Its importance is daily becoming more manifest—the culture of Tobacco is every where giving way to it.—It must, therefore, be highly advantageous to the Farmer to obtain every information that will tend to render his labours most effectual. With this view the following letter and observations on the diseases of wheat, are selected fron the Farmers Magazine.

ON THE DISEASES OF WHEAT.

SIR,

The unfavorable idea entertained by Sir John Sinclair, in the result of his inquiries respecting the causes of mildew and other diseases in wheat, in so far as the same are attributed to the heavy manuring and full seeding of the ground, occasions me to trouble you with this letter.

It may justly be considered as a truism, that he who sows sparingly, will reap sparingly; and whatever ideas may be entertained, in theory, respecting muck, it has, in practice, been invariably found the great desideratum for rendering fields permanently fertile. Lime, marl, shelly sand, and all calcarous substances, have powerful effects on their first application; but when repeated, unless accompanied with vegetable manure, prove but feeble enrichers of exhausted ground; and accordingly, it is an object of the first importance with every practical farmer, to increase the quantity, and improve the quality of this most valuable article, as

much as possible. As every essential good may be perverted to a bad purpose, there is no doubt that excess in dung or seed has at times proved hurtful; but where one acre suffers from getting too much of either; a hundred acres suffer from receiving too little. It must be obvious to every attentive observer, that, were the manure labour and seed, which, in a large proportion of the country, are stretched over too great a breadth of ground, confined to two thirds and, in many places, to one half of the extent, the fields would be much more productive than they are; and it is owing to the over frugal manner in which manures of all sorts are generally administered, that so many weak crops, or rather effigies of crops appear, and lands revert so rapidly to their former unproductive state.

As the disorder which befel the wheat crop of last season was uncommonly striking and severe, it is no wonder that the feelings of true patriotism were roused, and every possible method tried to investigate the cause of the evil, and to find out an antidote against its malignant attacks in future. In such cases, however, great caution is always requisite, lest by endeavouring to avoid one evil we fall into a greater. Thin light crops, are without doubt, less liable to suffer by heavy rains and moist cloudy weather than weightier ones; but would it, on this account be advisable to regulate our cultivation by such a standard? Certainly not; at any rate, so far as my observation went, the thin light crop of last season did not escape more than the heavier ones. The diminutive heads on weak stalks, as well as the larger ones on stronger stalks, in parts of fields where the crop was thinner, were no better filled then where the crop was close and weighty; a striking instance of which occurred in one of my fields of about fourteen acres, where, from variety of soils, and different preparations, both descriptions were conspicuous. Eleven acres were sown on the 16th and 17th October, after potatoes and drilled beans; and three acres on the 22d and 23d February following, after turnips. Eight bushels of a particular

small variety of London seed was sown on about two and a half acres of potatoe ground, and also seven bushels of Kentish seed on potatoe ground adjoining that sown with wheat from London: the remainder of the ground being seeded with Kentish wheat once sown in this country. The plants from the London seed bairded equally, and as soon as they appeared above ground fully satisfied me, that, through the inattention of my servant too much seed had been given. The crop being obviously too thick, and screened on the west by a low hedge row of trees was lodged soon after shooting; and, as the head was short, small and soft, even when cut, I laid my account with a poor return, and gave up all thoughts of trying the produce as seed for next season.

It was however, carefully kept by itself, and threshed out in February, when, to my astonishment there were twenty six bolls two firlots of marketable grain, and six firlots of an inferior quality. The produce being so much above expectation, I was induced to sow a boll of it after turnips, as a further trial next season. The seven bushels that came from Kent being sown of a proper thickness, yielded stronger stems, and lodged less, than the former; but, though apparently a better crop, did not return so much by two bolls per acre; and as for the produce of the rest of the field, it came three and a half bolls short per acre, whether after potatoes or beans; that after beans being more soft and shrivelled than what was after potatoes, though it had the advantage of the deepest soil, which had been equally well dunged as the other parts the preceding year. Indeed the most gravelly and thin parts of the soil, in every field which I inspected, uniformly produced the hardest head, and best filled grain; and is a strong proof of the little effect the drought had in promoting the malady, as well as the little relief to be obtained by thin sowing, or withholding manure. In my field the produce in turnips was better in quality, though less in quantity than after potatoes, but fully more than after drilled beans.

The singular phenomenon of whole fields in particular districts being instantaneously deprived of vegetation, appears from many circumstances, to have been occasioned by the electric fluid which the clouds at that period emitted in remarkable quantities; particularly when we reflect that no other means, hitherto experienced was competent to that effect, except frost; and it is evident that frost could not have accomplished what took place, without manifest injury to, if not total destruction of various other kinds of crops, especially potatoes, which though liable to damage from even slight degrees of frost, escaped without the smallest blemish. As to the partial injury which the wheat crop in general experienced, it seems to have proceeded from an excess of unfavourable filling weather, as a continuation of easterly hazy fogs never fail to retard the filling process, at times partially to arrest conception and maturation, and to bring rust and a dusky hue on all plants not in vigorous growth, which afterwards become a prey to animals that take possession of them. Heavy showers have the same effect; and, even in moist cloudy weather, grain is never fully matured. These causes combined, continuing to operate for several weeks as was the case last season were surely sufficient to accomplish (excepting the mortal blow alluded to as proceeding from electricity) all that took place without the aid of fungi maggots, &c; which seemingly were conequences rather than causes of disease. Neither does it appear that much could be ascribed to the effects of putrid effluvia arising from the ground. However ingenious this theory may be, it is not quite consonant with the sound, orthodox doctrine usually noted in the Farmer's Magazine. The probability rather is, that the meliorated state of the soil from being moistened after a long period of warm weather, had yielded an excess of nutriment in a degree somewhat similar to what prevents the filling of grain growing on dunghills, as well as the rank tufts often seen in fields, neither of which ever fill perfectly. In all these cases, the impediment so obviously owing

to excess of nourishment, as the grain is always better or worse filled, in proportion to the degree of luxuriance that appears. Besides, did the failure in these instances originate from pestilential vapours, how could the surrounding corns escape? And if the smoke that arises from the ground, when warmed and moistened, was possessed of deleterious powers, what would be the fate of tender barids in the months of May and June, when more of that vapour appears than at any other season of the year? Even the blotches, rust and fungi, seen on exuberant foliage, seem as likely to be formed by the action of the atmosphere upon the exudings and perspiration of plants, as is observable upon plants during severe frost, as from any vegetative principle drawing existance from plants. In the case of last season, much of the mischief has been ascribed to drought, from the crop being thereby affected before the commencement of rains. Nothing, however, came within my observation, nor has taken place since, which warrants such a conclusion; the grain on the driest parts of all fields in this neighbourhood having been better filled than those on deep earthy soils. Oats suffer sooner, and more, by heat, than any other grain; and yet we find those raised on the driest ground meal best.

A great degree of luxuriance is always unfavorable to the filling of grain, as superabundant nutriment, by too highly fostering the stems and foliage, not only postpones the stage of filling, but retards the process of the sap or mucilage in its conversion into grain. Few seasons have been more favourable to vegetation than the months of May and June last. Crops of all kinds throve in an uncommon manner; and at the end of July, when the rains began to fall, the heated ground became so ameliorated by the moisture, as to yield nutriment in no small degree detrimental to the maturation of grain. This circumstance, and the long continuance of most unfavorable weather afterwards, were abundantly sufficient, without the aid of putridity, to effect all that came to pass. Besides, the inured state of

most other plants at that period, tends greatly to confirm this opinion; for, had this supposed putrid quality existed to any extent in the atmosphere, other plants as well as corns, would have felt its baneful effects.

It is worthy of notice, that excessive luxuriance seldom proves advantageous to the crop; and that is often promoted by a friableness in the soil, or a volatile quality in the manure—though neither of them, nor even both combined, are adequate to the production of weighty crops, while other preparations operate reversely. Theory has too much influence in forming systems, without attending to their bearings and consequences. The long partiality shewn in favor of clover len, as a preparatory step for a wheat crop, and the antipathy entertained against potatoes as a cleaning crop, are proofs that farmers are too often misled by improper systems and incorrect opinions. A wheat crop after clover, especially if the clover was sown with a crop, for which the land had not been summer fallowed, rarely succeeds; and if it does succeed, the benefit gained may justly be reckoned inferior to what might have been obtained from taking a crop of oats; whilst the soil will, in the latter case, be in a much more superior condition. With regard to potatoes, I am glad to remark, from the communications to Sir John Sinclair, that, it appears juster notions are now prevalent as to the utility of this crop than formerly. Wheat after potatoes is found less liable to disease than after fallow or beans, and equally productive. The experience of half a century, every year of which I have sown wheat after potatoes, enables me to speak with precision in favor of that mode of culture, having rarely, if ever, observed, that in following it, imperfect grain was obtained, whilst in four instances out of five, the produce was greater than procured in any other way. The straw of all grain which succeed potatoes, especially that of wheat is peculiarly clean, stiff and tough, standing the mill much better than what is raised in any other method; hence it is plain, that wheat after

potatoes, continues in a healthy state, when other wheat is diseased and debilitated; and of course the culture of potatoes must be viewed as one of the best preparations for wheat with which we are acquainted.

I have long regretted, that from potatoes not keeping over one season, the culture of that valuable root should have been less followed than other crops; but, I flatter myself, that now when unfavorable prejudices against them are wearing away, their cultivation will be considerably extended, not only as a preparatory seed for wheat, but also as food for horses and cattle. Along with ruta baga, I hope that potatoes will soon be used for supporting farm stock, during the winter and spring months, to the great benefit of the animals, and the advantage of their owners.

Before I finish, allow me to state that the bad crop of wheat, in 1799 caused the woolly eared variety almost entirely to be given up; since which the smooth chaffed sorts have been generally used. I have doubts on the propriety of the change, because the woolly-eared kind, had long been in vogue, and was considered to yield the greatest produce. The following fact perhaps merits some attention. A seed merchant in 1807, sent me seven bushels of English wheat, which was sown on part of a nine acre field that lay at a distance from my residence. This field had not been inspected during the foggy and rainy weather at the close of last summer; but when viewed afterwards, the part sown with English wheat, which turned out to be of the woolly eared variety, distinguished itself at half a mile's distance, by presenting a dark dusky appearance, the chaff being much blackened; notwithstanding these circumstances, the crop when threshed, yielded plumper grain, with less refuse, than what was obtained from the rest of the field; which, after all, might in some respect, be owing to the change of seed.

I am, yours &c.

T. S. S.

Mid Lothian, 1809.

Remarks by the Conductor of the Farmer's Magazine.

With much respect for our worthy friend, Mr. T. S. S. whose sentiments on Agriculture rarely differ from those uniformly maintained in this work, we are in duty bound to notice one or two passages in the above interesting and valuable communication; thinking, that when making them, his wonted consideration was asleep, and of course that our good friend had neglected to estimate the bearings and consequences of what he stated. In the first place we must allude to his comments on what we lately urged, respecting the causes of the calamity which affected the wheat crops of last season. That unfortunate calamity we always viewed as produced by atmospherical influence; and in particular, we considered putrid effluvia, or pestilential vapour, as the chief, though not the only agent of the mischief so widely and extensively sustained. It must be confessed that we do not observe any thing advanced by Mr. T. S. S. much calculated to produce a change of our sentiments. He, indeed, mentions another agent of mischief, namely, electrical fluid; and on this point we are at one with him, because the air when filled with electric fluid is never in a healthy state, but when an excess of nutriment is assigned as a cause of failure, we feel an inclination to shake our head and crave leave to remind our good friend, that the period was arrived when the growth of the parent plant had ceased, and that the young and tender grain needed only mild and kindly weather, to maturate and bring it to perfection. Without reflecting upon these things, our good friend argues the point as if wheat plants were capable of growing forever; else, why does he assign excess of food to the roots and fibres, as the cause of mortality to the grain deposited in the cups of the ear; which is neither more nor less than saying that the crop was killed by a surfeit. Again he supposes if excessive heat, surrounded by excessive moisture, produced pestilential vapour, that other grains could not have escaped. That other grains suffered as well as wheat, is

well known. Our good friend also supposes, if vapour or effluvia possesses deleterious powers, that the young braid of grain would be cut off in May or June, when more of that vapour appears than at any other period of the season. To this we answer, That vapour produced in May or June, cannot have the same effect with that produced in July or August, because the heat is not then so great; consequently, when succeeded by heavy rains, the atmosphere cannot possibly be so much contaminated. But without laying any stress on this point, it is maintained, that though the crop when young, may not receive injury from putrid effluvia, (perhaps, on the contrary, it is thereby much benefited) it will always in a greater or lesser degree sustain injury, if the atmosphere is filled with such vapour, when the grain is in an embryo state; and that the extent of the injury will be regulated, by the age or strength of the young grain, and the length of time in which the atmosphere continues sickly and unhealthy. The truth of what is maintained, is fully confirmed by what happened last season to the wheat crop; every field in the eastern counties of Scotland, those on the sea shore and upland districts excepted, having suffered in one respect or other, whilst fields on the shore, where the heat was moderated by sea breezes, were very little affected. Even wheats in the uplands were fully as good as usual. Now if electrical fluid and excess of nutriment occasioned the failure, unfortunately now too well ascertained, how comes it about that the influence of these causes was not felt as decisively upon the sea shore as in the internal districts? That they were not so decisively felt is well known to every man who has attended public markets; and can only be accounted for, by a reference to the cause condescended upon in this and former papers. After all, as the disease which affected wheat last year was of an abstruse nature, it is highly probable that more agents than one, were concerned; and this may be admitted without impugning, in the slightest manner, the opinion given by us on the subject.

The method of cleansing Silk, woolen and Cotton Goods without damage to the texture or colour.

[From the Transactions of the Society of Arts, &c.]

TAKE raw potatoes, in the state they are taken out of the earth; wash them well; then rub them on a grater over a vessel of clean water to a fine pulp, pass the liquid matter through a coarse sieve into another tub of clear water; let the mixture stand till the fine white particles of the potatoes are precipitated; then pour the mucilaginous liquor for use. The articles to be cleaned should then be laid upon a linen cloth on a table, and having provided a clean sponge, dip the sponge in the potatoe liquor and apply the sponge thus wet upon the article to be cleaned, and rub it well upon it with repeated portions of the potatoe liquor, till the dirt is perfectly separated; then wash the article in clean water several times to remove the loose dirt; it may afterwards be smoothed or dried.

Two middle-sized potatoes will be sufficient for a pint of water.

The white fecula which separates in making the mucilaginous liquor, will answer the purpose of tapioca, will make an useful nourishing food with soup or milk, or serve to make starch or hair powder.

The coarse pulp, which does not pass the sieve, is of great service in cleaning worsted curtains, tapestry, carpets, or other coarse goods.

The mucilaginous liquor of the potatoe will clean all sorts of silk, cotton or woollen goods, without hurting the texture of the articles, or spoiling the colour.

It is also useful in cleansing oil paintings, or furniture that is soiled.

Dirty painted wainscot may be cleaned by wetting a sponge in the liquor, then dipping it in a little fine clean sand, and afterwards rubbing the wainscot therewith.

Various experiments were made by Mrs. Morris, in the presence of a committee, at the society's house; the whole process was performed before them upon fine & coarse goods of different fabrics, and to their satisfaction.

Columbian Agricultural Society.

At a meeting of the Standing Committee of the Columbian Agricultural Society, it was ordered,

1st. That the general meeting of the Society to be held in Georgetown on the 3d Wednesday of May Inst. be held at the Union Tavern at ten o'Clock A. M.

2nd That all articles of Manufacture, to be exhibited for premiums, on that day, be delivered to the Secretary at his House, or such place as he shall direct, on the evening preceding the day of exhibition, before 8 o'clock; each article being marked or numbered, as the owner or exhibiter may think proper, and accompanied with a sealed letter, similarly marked or numbered, and containing the name of the owner or exhibiter.

3d. That all the cattle to be exhibited for Premiums be delivered to the Secretary or his agents, before 9 o'clock on the morning of the exhibition, and at such place as shall be prescribed.

4th. That John Mason and John Threlkeld together with the Secretary, be appointed a Committee of Arrangement to procure a suitable place for the Exhibition of Manufactures, and proper Lots and Enclosures for the Cattle; to provide and distribute Tickets for the admission of Members of the Society and their families, and such other Ladies and Gentlemen as they may deem proper, and to do and direct such other things as may be judged adviseable, previously to the exhibition.

5th. That George Calvert, John Cox, Nathan Lufborough, John W. Bronaugh, and Tench Ringgold be appointed Managers for the day—And it was

Resolved, That no premium shall be adjudged to any person, if the judges shall not consider the Animal or Article exhibited, of such quality as to merit premium.

And to afford still further encouragement to Farmers, and Manufacturers, it was Resolved, That all those who

may have for sale, Cattle, Sheep or any articles of Domestic Manufacture, be invited to bring them to the Exhibition—that convenient opportunity be afforded to exhibit them to public notice—that stands, proper inclosures, and other accommodations, be provided for them, and that those who choose it, have the benefit of a public Auction, on the evening of the exhibition, and on the succeeding day and at an early hour; it being understood that the Auctioneer be paid by the seller, a moderate per centage on the amount of all articles actually sold, and that the owners be at the expence of provender and attendance for their Cattle and Sheep.

The Standing Committee then adjourned to meet again at the Union Tavern in Georgetown, on the morning of the General Meeting and Exhibition, at 9 o'clock.

David Wiley, Sec'ry.

Georgetown, May 6th, 1811.

Arlington Sheep Shearing.

The anniversary of the Arlington Sheep Shearing on Tuesday the 30th of April was attended by a numerous and respectable company of Gentlemen, of whom several were from a distance.

The exhibition was held in a large circular arbor, including a smaller inclosure, appropriated to the judges and strangers.

The Premium for Cloth of Domestic Manufacture, was adjudged to Mrs. Ann Sowden of Prince William County—

The Premium Cup for the best Tup-Lamb, was adjudged to John C. Scott, of Strawberry Vale, Fairfax County; and the Prize for Ewes, to Daniel M'Carty Chichester, of Fairfax County, all of Virginia.

The patriotic efforts and hospitality of Mr. Custis, on this occasion, are entitled to the greatest credit.

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THE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

Vol. I.] *Georgetown, Ca. May 22.* [No. 23.]

For the Agricultural Museum.

LUCUBRATIONS ON SOILS.....No. 5.

In the foregoing cursory observations upon the subject of soils in general, we have without much loss of time, travelled from the Sea-board to the Glades on the top of the mountains, and with a bird-eye view, we have traced the ridges and mounds, and a few of the most conspicuous, and strongest lines, or natural boundaries, which limit the principal regions of soil. I pretend not to a thorough or scientific knowledge of the subject; my object is to invite and point out the way to proper and useful reflections on a subject the most important to mankind. The descriptions given, are such as will apply to the formation of lands in all parts of the globe. Yet, the foregoing observations refer principally to all that portion of land which lies between the mouths of the rivers emptying into the Chesapeake bay, and their sources at the foot of the Allegahany. We have shewed in what manner, the rivers and waters by their perpetual action, and the great laws of composition, vegetation and decomposition, affinity and gravitation have formed, and are unceasingly changing and making land, and that time is the great executor of all these laws. Although these great principles are so very gradual and slow in their operation, that the span of a man's life, are to the great works of nature, only as an hour—yet, I thought it necessary, before I introduced the dissertation and analysis of the chymists

upon soils and plants, to premise a short tract explanatory of the fundamental laws of nature, which are the primary cause of the changes and variety of soils, without a knowledge of which, as full and clear a comprehension as the subject will admit, at this time, could not be had. We have also set bounds to some of the principal regions of soil, and shewn that the surface, elevation, and position generally, to say nothing of other causes, form material differences in soil and produce, sufficiently distinct characteristic traits on which to bottom a system of classification.

I will now, according to the promise made in my first number, proceed to a more minute and specific description of the soils most commonly found, shewing the analysis and composition of fertile soil, and the food of plants, taken almost wholly from Kirwan and the most approved chymical writers. At the same time I will shew the general position of the kinds of soils described in the regions heretofore spoken of. Preparatory to this investigation, it is necessary to settle accurately the meaning of the names and distinctions of soils, elementary earths and manures, intended to be used; as the terms used by Agricultural writers are frequently very vague, and have different meanings in different places and countries.

I shall adopt the distinctions and denominations given in the first chapter of Mr. Kirwan's treatise on manures and soils, as follows:

Land considered as the basis of vegetation is called *Soil*.

Soils consist of different combinations of two or more of the four primitive earths, namely, the calcareous, (which sometimes he calls mild calx) magnesia, argill, and the silicious. For a more accurate description of these I must refer to books of mineralogy, and shall only remark that by calcareous earths, are meant chalk, and all stones that burn to lime. They are easily

distinguished by their property of effervescing with acids.

Magnesia is never found alone; its distinguishing character consists in affording a bitter salt, generally called Epsom salt, when combined with the vitriolic acid.

Argill is that part of clay to which this owes its property of feeling soft and unctuous, and of hardening in fire; it is difficultly soluble in acids, and scarce ever effervesces with them. When combined with the vitriolic acid, it forms allum.

Silicious Earth is often found in a stony form, such as flint or quartz, and still more frequently in that of a very fine sand, such as that whereof glass is made. It does not effervesce, nor is it soluble in any of the common acids.

To these we may add iron, in that imperfect state in which it exists when reduced to rust, and commonly called calx of iron.

Clay is of various colours; for, we meet with white grey, brownish red, brownish black, yellow, or bluish clays, it feels smooth and somewhat unctuous: if moist, it adheres to the fingers, and if sufficiently so, it becomes tough and ductile; if dry, it adheres more or less to the tongue; if thrown into water, it gradually diffuses itself through it, and slowly separates from it. It does not usually effervesce with acids unless a strong heat be applied, or that it contains a few calcareous particles, or magnesia. If heated, it hardens and burns to brick.

It consists of argill and fine sand, usually of the silicious kind in various proportions, and more or less ferruginous. The argill forms generally from 20 to 75 per cent of the whole mass. The sand and calx of iron the remainder. These are perfectly separable by boiling in strong vitriolic acid.

Chalk, if not very impure, is of a white colour, moderate consistence, and dirty surface, stains the fingers, adheres slightly to the tongue, does not harden when heated, but on the contrary, in a strong heat burns to lime and loses about four tenths of its weight. It effervesces with acids and dissolves almost entirely therein. I shall also add, that this solution is not disturbed by caustic volatile alkali; as this circumstance distinguishes it from magnesia—it promotes putrefaction.

Sand. By this is meant small loose grains of great hardness, not cohering with water, nor softened by it. It is generally of the silicious kind and therefore insoluble in acids.

Gravel differs from sand chiefly in size; however, stones of a calcareous nature when small and rounded, are often comprehended under that denomination.

Loam denotes any soil moderately cohesive: that is, less so than clay, and more so than loose chalk. By the author of the Body of Agriculture it is said to be a clay mixed with sand.

I do not conceive that clay and sand alone, can properly be called loam, without a portion of decayed vegetable matter which fits it for vegetation, and makes it less heavy than pure clay and sand. In this last sense I have used it, and cannot but think it correct.

Clayey Loam denotes, a compound soil moderately cohesive, in which the argillaceous ingredient predominates. Its coherence is then greater than that of any other loam, but less than that of pure clay. The other ingredient is a coarse sand, with or without a small mixture of the calcareous ingredient. It is this which Farmers generally call strong, stiff, cold, and heavy loam, in proportion as the clay abounds in it.

Chalky Loam. This loam indicates a loam formed of clay, coarse sand and chalk; in which, however, the

calcareous ingredient or chalk much predominates. It is less cohesive than clayey loams.

Sandy Loam denotes a loam in which sand predominates—it is less coherent than either of the above mentioned. Sand partly coarse and partly fine, forms from 80 to 90 per cent of this compound.

Gravelly Loam differs from the last only in containing a larger mixture of coarse sand or pebbles. This and the two last, are generally called by farmers, light or hungry soils, particularly when they have but little depth—They are properly so called when the chalk, sand or gravel preponderates too much, so that it will not retain a sufficiency of moisture, not otherwise; for gravelly loams and sandy loams are often found very fertile and durable; for instance, the best tobacco lands in Maryland.

Ferruginous loam, or till. This is generally of a dark brown, or reddish colour, and much harder than any of the preceding. It consists of clay and calces of iron more or less intimately mixed. It may be distinguished not only by its colour, but also by its superior weight; it sometimes effervesces with acids, and sometimes not; when it does, much of the irony part may be separated by pouring it, when well dried, into spirit of salt, from which the iron may afterwards be separated by alkali or chalk—akin to this are certain vitriolic soils, which when steeped in water, impart to it the power of reddening syrups of violets. These are generally of a blue colour, but redden when heated.

Boggy Soil or *Boggs*, consist chiefly of ligneous roots and decayed vegetables mixed with earth, mostly argillaceous, and sand and a coaly substance, derived from decayed vegetables.

Of Boggs there are two sorts, the black, which contains a large proportion of clay, and of roots more perfettly decayed, with mineral oil. In the red, the roots seem less perfectly decayed, and to form a principal part.

SYLVANUS.

[To be continued.]

OBSERVATIONS ON STEAM ENGINES.

From the Aurora of 12th Sept. 1810.

It was in the year 1773 or 1771, thirty five or six years since, I first discovered the principal of my improvement on steam engines, and about twenty seven years since I discovered the means of applying it, to the propelling boats up the Mississippi and other rivers, and carriages on turnpike roads; ever since that discovery I have been endeavoring to persuade those interested to apply those principles to the said purposes, I have travelled hundreds of miles to see different ingenious men, to engage them, but none could be found willing to risque the expence. In the year 1786 I petitioned the legislature of Pennsylvania; they supposed me deranged, and I met from them no encouragement on the subject.

In 1787, I petitioned the legislature of Maryland, and they granted me an exclusive right in that state for 14 years; this patent expired before I could do more than try several experiments. In the year 1801, I began to make a steam engine on the principle, for a plaister mill, it, with the experiments I had to make, cost me $ 3,700, a sum hardly earned, and illy spared at that time, although I succeeded perfectly.

In the year 1802 or 1803, captain James M'Keever and Louis Valcourt having been in Kentucky, a letter which I had written to a gentleman there, explaining how my improvement would apply to steam boats, in the western waters, agreed to construct a steam boat, to ply between New Orleans and Natchez. The captain superintended the building of the boat, and Mr. Valcourt came to Phildelphia, and in the fall 1803, had the engine constructed at my shop, while I was at the City of Washington, and they met at Orleans, fitted the engine to the boat, ready for experiment—but the water had left them high and dry, not likely to raise to float the boat in less than 6 months, they having expended about $ 15,000, their money was exhausted, and they left in a sad dilemma. Mr. Wm. Donaldson of Orleans, furnished

them with money, on condition they would take the engine out of the boat, and apply it to drive a sawmill there, to saw timber; this they did, and began to saw 2000 feet of boards in 12 hours, when incendiaries set fire to their mill and reduced it to ashes—Thus failed the most noble enterprise ever undertaken by individuals under similar circumstances. They have both written to me frequently, that they were confident that the power of the engine was quite sufficient to have ensured success in propelling the boat, and they entertained sanguine hopes of being yet able to put the principle in operation, but the noble enterprising spirit of captain M'Keever has left us, to rest from trouble; he died while engaged in getting his engine up again to saw timber.

In the year 1804, Dr George Hunter of Philadelphia, having seen my little engine, 6 inches diameter, and 18 inches stroke, driving 12 saws, sawing stone, had represented the same to Mr. W. Donaldson, of New Orleans, which had induced him to order one for to drive 4 saws to saw timber. This engine arrived at New Orleans a few days after M'Keever and Valcourt's mill was burnt, also another from England, of the same power, arrived the same day.

The two companies of workmen set out, each to get their engine to saw. Mr. Donaldson's has been going about three years and six months, driving at first three saws and a pair mill stones, now four saws and the mill stones, sawing daily their task of 3,000 feet of boards in 12 hours, and at the same time grinding 5 bushels corn per hour. The boards sell now at 45 to 50 dollars per thousand feet, and the mill clears in profit 20,000 dollars per year, say 60,000 dollars; while the English engine is said to have cost 60,000 dollars, and yielded no profit, owing principally, to its using so much water, that the well will not supply it, and the difficulty of attending and keeping it in order, so that the difference between the two establishments at this day, appears to be very great indeed in point of profits.

Can English engineers believe this, when they are informed that the cylinder of this engine, is only nine inches in diameter, the stroke of the piston three feet. If they could believe it, they would acknowledge that my principle is the only one now in use, suitable for propelling boats up the Mississppi, as well as preferable for every other purpose.

Truly there has not been this engine's equal; for it is ten times as powerful as the best English engine, of equal dimensions, and so simple in its structure, that an Irish weaver, employed to assist in constructing it, became master of every part of the work, and can build one as good, and attend it as well as any man. It has no equal excepting one whose cylinder is 9 2-10 in diameter, and 3ft. 2 in. stroke, which I have since applied to grind grain in Pitsburg, in co. with Mr. Owen Evans, who is among the first willing to risk his money on a new thing; with this engine I would engage to grind 480 bushels wheat in twenty-four hours.

When I reflect on the expence of time, labor and money that it has cost me, the many difficulties I have met with, in getting this improvement into use, one calculated to render this country more benefits than any other yet made—When steam boats on the Mississipi shall become as numerous as other craft on the Delaware, performing a voyage in 5 days, which now requires thirty, moving with power from 100 to 500 or more men—When I view the progress I have been able to make in 27 years, and find the minds of many as firmly shut against the light as ever, I am astonished, and believe, I am justly entitled to both the honors, and profits, of my improvement, if any is ever to be received.

I have been agitated between hope and despair, respecting the application of my improvements to boats on the Mississippi, during my life, which was originally and always my principal object, and next to it a steam mill in Pittsburg; the one is accomplished, and so will

the other be, as soon as the principle shall be applied. I have waited as an humble suppliant petitioner, on Congress, for two whole sessions, endeavoring to induce them to extend the time to patentees, which would enable them to draw to their aid monied men, this is not yet done, but the prospects have brightened.

On Sunday, 26th August last, I passed in the Phoenix steam boat, from Philadelphia to Bristol, about twenty miles distant, and was highly delighted to find my hopes so far realized. She moved majestically through the water passing row boats, with such rapidity that it was vain for them to attempt to board, if they fell astern; offering a safe, commodious and certain passage to travellers, against wind or tide.

I was, however, sorry to find, in conversation with Mr. Stevens, son of John Stevens, esq. the owner, that he did not appear to be fully convinced, that there was one thing still wanting, to enable him to stem the rapid current in the Mississippi—viz. the application of the irresistible power of elastic steam, when it is sufficiently confined, from which we may obtain any power we may want, and keep it up, to work the engine with very little more expense of fuel.

The application of this principle to my engine is what I have patented, the use of which having been exploded as unconfinable, ungovernable, disadvantageous, and dangerous, for one hundred years past. It was not known and used before I discovered an error in the rule for calculating, and a true rule for ascertaining its power to burst the boiler, & the thickness of the iron necessary to hold it, arranged an engine, and applied it successfully.

The principle of confining and retaining the steam, to gain power, save fuel, to lessen the size and weight of the engine, to simplify it by rendering a condenser unnecessary in most cases, and to lessen the quantity of water necessary to work an engine thereby to fit it for boats, or carriages, also mills to be set any where on wells, was

become free to be patented by any one who could make the discovery, so useful, and so much wanted.

They have, however, abandoned their tube boilers, which they patented one year after my principle had been steadily in useful operation, and have followed me and copied my engine, so exactly, that they have the identical same form of boiler, consisting of cylinders of strong sheet iron, 3 feet 6 inches diameter, 18 feet long, to contain the water and steam, with flues to pass the fire through them, that it may generate the more steam, and save fuel. This being the form recommended by me in my book, explaining the principles, and the application of my improvements. They also apply a forcing pump, which becomes necessary in using the principle, to supply their boilers with water, so that they have my form of engine in use, and are prepared to use my patented principle also when they need it, and can by these means treble their present power with safety, when they please, which will enable them to ascend the Mississippi 50 or 60 miles a day, by day light, and to excel all other steam boats with engines of equal dimensions.

I do not know whether they mean to infringe my patent right in full, or to obtain my licence to use my principle, which (to encourage the enterprize) I would grant at a low price.

I have, at great labour and expense, prepared my works to construct my engines, for those who may want them for any and every purpose, and if there was nothing else to recommend them, their simplicity is well worthy of notice, they do not use more than 1-40th or 1 50th part the water, and consume much less fuel than others, are less liable to be impaired, are easier understood and attended, occupy less room, and will apply to every purpose for which steam engines are useful, and when applied to boats, will pass all other steam boats, as they now pass row-boats.

OLIVER EVANS.

TO DESTROY CATERPILLARS.

As the season is arrived for the insects which produce the canker worm, to quit their wintry abode, and ascend to the apple trees, it may not be amiss to publish a few observations and experiments on the subject.

A neighbor of mine observed an article in the papers of the last year, advising to inclose the trunk of the trees with a narrow bag made with linen cloth filled with fine salt; but he not having any cloth suitable for the purpose, used a substitute, what the farmers call swingling tow, which he twisted into a large string and long enough to go round the body of the tree, putting in salt as he twisted it up, so as to enclose the tree with salt, about two feet from the ground—this tree was loaded with fruit in the fall of the year, while the other trees in the orchard appeared as if a fire had passed through them; which experiment, I think, goes far to establish the fact, that the salt used in either way will preserve the trees from the ravages of the canker worm.

The caterpillar or bag worm I am confident may be prevented from injuring the fruit of the apple tree, by placing a turf in a crotch of the tree. I tried it in a number of trees in my orchard the last season, and there was none of the worms to be seen on them through the summer; but one tree which I neglected, I found when the worms were about half grown, was like to be injured by that pernicious insect. I then destroyed as many of them as I conveniently could and applied the turf, and in a few days there was not one to be seen on the tree.

Another neighbor of mine informed me that he had a couple of plumb trees in his garden, standing some distance from each other; in the summer he found that one of them was covered with bag worms, and recollecting the advertisement which recommended the use of the turf, he applied one to the infected tree, and the consequence was that they left that tree and took to the other.

M Republican.

Columbian Agricultural Society.

At a general Meeting of the Columbian Agricultural Society at Georgetown, on Wednesday the 15th inst. their Exhibition was held in a pleasant grove, the property of Thomas Beall of George, Esq. adjoining Mr. Parrot's Rope Walk, when the following Premiums, to be paid in plate with suitable devices, or the amount in cash, were awarded, viz.

Premium 1—To the value of Sixty Dollars: For the best two toothed Ram Lamb, of the fine wooled breed;

Adjudged to General JOHN MASON, of Analostan Island, District of Columbia, for his seven-eighths blooded Merino Ram, Potomac Chief, of the breed of Col. Humphreys' flock.

Premium 2—To the value of Sixty Dollars: For the second best two toothed Ram Lamb, of the long wooled breed;

Adjudged to JACOB GIBSON, Esq. of Talbot county, Eastern Shore, Maryland, for his long wooled Ram, Pizarro, of the Calvert County breed.

Premium 3—To the value of Forty Dollars: For the second best two toothed Ram Lamb, of the fine wooled breed;

Adjudged to Mr. ROGER BROOK, of Montgomery county, Maryland, for his half blooded Merino Ram, Hopewell, of Dupont's breed.

Premium 4—To the value of Forty Dollars: For the second best two toothed Ram Lamb, of the long wooled breed;

Adjudged to WM. BOWIE, Esq. of Prince George's county, Maryland, for his long wooled Ram, of the common country breed.

Premiam 5—To the value of Forty Dollars: For the greatest number of Lambs, in proportion to the number of Ewes, dropped and raised in one flock of not less than 40 Ewes; provided, that the number of Lambs be at least equal to the number of Ewes;

Adjudged to JACOB GIBSON, Esq. of Talbot county, Maryland,

Premium 6.—To the value of Thirty Dollars: For the best piece of cotton cloth, proper for women's dresses, not less then 10 yards;

Adjudged to Mrs. ELIZABETH BAILEY, of Ann Arundle county, Maryland.

Premium 7.—To the value of 30 Dollars: For the best piece of fancy patterns for vests, not less then ten yards,

Adjudged to Mrs. ELIZ. BAILEY, of Ann Arundle county, Maryland.

Prumium 8.—To the value of 30 dollars: For the best piece of cotton cloth, suitable for pantaloons or small clothes, not less then 10 yards;

Adjudged to Mrs. MARTHA P. GRAHAM, of Dumfries, Prince William county, Virginia.

Premium 9.—To the value of 10 Dollars: For the best pair of woven Stockings, of cotton or thread, full size;

Adjudged to Mrs. ANNA M. MASON, of Analostan Island, District of Columbia.

Premium 10—To the value of 30 Dollars: For the best piece of hempen flaxen sheeting, not less than ten yards;

Adjudged to Mrs. BRUCE, of Alleghany county, Maryland.

Premium 11—To the value of 30 dollars: For the best piece of hempen or flaxen shirting, not less than ten yards;

Adjudged to Mrs. ELIZABETH BAILEY, of Ann Arundel county, Maryland.

Premium 12—To the value of 30 Dollars: For the best piece of hempen or flaxen table linen, not less than ten yards;

Adjudged to Mrs. KIMBALL, of Fredericktown, Md.

Premium 13—To the value of 20 Dollars: For the best piece of twilled bagging of hemp, flax, or cotton, not less than ten yards;

Adjudged to Mrs. MARY CANBY, of Montgomery county, Maryland.

Premium 14—To the value of 20 Dollars: For the best piece of bed ticking of hemp flax or cotton, or in part of all or either, not less than ten yards;

Adjudged to Mrs. SARAH M'CARTY MASON, of Hollin Hall, Fairfax county, Virginia

Premium 15—To the value of 10 Dollars: For shearing a Sheep in the neatest, safest and most expeditious manner;

Adjudged to EDWARD ENO, of Washington city.

Premium 16—To the value of five Dollars: For shearing a Sheep second best as above;

Adjudged to THOMAS M'GRATH, of Washington city.

Candidates for the fine WOOL *Premiums were*:

	Gross lb.	Fleece lb.
No. 1. Gen. Mason's Potomac Chief	103 3-4	6 3 4
No. 2, Thomas Peter's Montgomery	84 3 4	5 1-4
No. 3, Bazil Darby's Jack,	132 1-4	9 14 oz.
No. 4, R. Brook's Hopewell	93 1-4	4 11
No. 5, Mr. Chichester's ———	94 1-2	5 9

The above fleeces were unwashed.

The first premium awarded to No. 1, and the 3d premium to No. 4.

Candidates for the Long Wool *Premiums, were.*

	Gross lb.	Fleece, lb.
No. 6. Mr. Marbury	160	†7 6 oz
7. Mr. Gibson	112	*7 6
8. Wm. Bowie	121	†11 12
9. Bazil Darby	113	†9 5
10. Mr. Gibson's Pizarro,	120 1-4	*7
11. I. Duckett,	111	†8 12
12. Ditto	121 1-4	8 9

†Washed. *Unwashed.

Premium 2d awarded to No 10, and premium 4 to No 8.

Candidates for the Fifth Premium *were*

	Ewes	Lambs
Jacob Gibson,	64	95
Dr. William Dangerfield,	59	80

William Marbury, - - - -	48	65
R. Slaughter, jr. - - - - -	47	58
J Kent, - - - - - - -	40	51

The 5th Premium awarded to Jacob Gibson, Esq.

(Signed) W. FOOTE.
J. THRELKELD.
GERARD BROOKES.
THOS. HARWOOD, of Benj.
RICHARD K. MEADE.

The subscribers appointed to determine the Premiums for Domestic Manufactures, adjudge the 6th, 7th and 11th premiums to Mrs. Elizabeth Bailey; the 8th premium to Mrs. Martha P. Graham; the 9th premium to Mrs. Anna M. Mason; the 10th premium to Mrs. Bruce; the 12th premium to Mrs. Kimball; the 13th premium to Mrs. Mary Canby; and the 14th premium to Mrs. Sarah M^c^ Carty Mason.

(Signed) BAZIL BROOKE.
R. M. BOYER.
JOHN DAVIDSON.
JOHN HOYE.
HENRY CHILDS.

The Society are under great obligations to Mrs. Beall for the politeness and liberality with which she, in the absence of Mr. Beall, afforded them a place so beautiful and commodious for holding their exhibition; and to Mr. Parrot for the kind attention which he paid to the members and the company, and for the use of a variety of articles necessary to the convenience or beauty of the scene.

David Wiley, Sec'ry.

Georgetown, Col. May 17th, 1811.

The ARTICLES of DOMESTIC MANUFACTURE exhibibited were, perhaps, not so numerous, as on former occasions but their quality was excellent. Many of them might well vie with those which had crossed the Atlantic—and, what is still more important, they were sold at as low a rate. As usual the cottons of Mrs. Graham of Dumfries, and Mrs. Mason of Hol-

in Hall were worthy of high commendation, but those of Mrs. Bailey a new competitor, were judged to be still more perfect; and Mrs. Canby's Bagging which obtained the premium, had but one fault—it was too wide.

The Sheep which were shewn, far exceeded expectation, both as to number and quality. Mr. Gibson brought a flock of thirty four yearling lambs of the long wooled breed from his farm in Talbot county, on the Eastern Shore of Maryland, that were highly esteemed for their size and quantity of wool,—for one of which he obtained the premium of Sixty Dollars. Mr. Marbury shewed a ewe and her two lambs, one of a year old, and the other of this spring, that were of very extraordinary size and beauty—Mr. William Bowie's two toothed Ram of the long wooled breed produced the greatest quantity of wool, and had it been washed, and of a finer fibre, it must certainly have taken the first premium, instead of the second for quantity of wool. Mr. Ducket also shewed two very fine sheep.

Of the fine wooled tups, none could compete with General Mason's Potomac Chief, though those of Messrs Brook, Darby, Chichester and Peter, were certainly fine specimens. But the handsomest sheep shewn on the occasion was General John Mason's quarter blooded Merino ewe.—Her form, her countenance, the quantity and fineness of her wool, were well calculated to render her an object of universal admiration, and to convince every one who saw her, of the vast advantages to be derived from crossing the common sheep of the country with the Merinos.

General Mason, Judge Cranch, and T. Peter Esq. shewed imported Merino Rams of a superior quality—In short, of nearly a hundred shewn, there was not one for which the Exhibitor was not entitled to the thanks of the Society.

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THE

AGRICULTURAL MUSEUM.

OMNIS FERET OMNIA TELLUS. VIRG.

Vol. I.] *Georgetown, Ca. June 19.* [No. 24.]

For the Agricultural Museum.

LUCUBRATIONS ON SOILS.....No. 5.

Continued from page 359.

It is no less important to our purpose to adopt Mr. Kirwan's definition of Manures, which is the most accurate I have met with, and conveys precise, distinct, and clear ideas, which renders it extremely valuable.—I copy the chapter with but little variation, and nearly at length, as I did the preceding one.

OF MANURES.

Manure denotes any substance or operation by which a soil is improved. To improve a soil is to render it capable of producing corn, legumens, and the most useful grasses.

The substances principally used as manures are chalk, lime, clay, sand, marl, gypsum, ashes, stable dung mucks, farm yard dung, pounded bones, sea weeds, sweepings of ditches, old ditches. Other manures or top dressings, as they are employed chiefly to promote the growth of vegetables, and not merely with a view of improving the soil, I omit.

The operation used to improve soils are fallows, draining, paring and burning. As to paring and burning my experience in burning leads me to believe it cannot be done without injury rather than benefit.

Of chalk, clays, and sand we have already treated.

Lime is a substance whose external characters and mode of production are well known. It differs from chalk and powdered limestone, chiefly by the absence of fixed air, which is expelled from these during their calcination. This air it greedily re-absorbs from the atmosphere, and all other bodies with which it comes in contact, and which can furnish it; but it cannot unite with the air unless it is previously moistened. One hundred parts quick lime absorb about 28 of water. It is soluble in about 700 parts of this fluid. To regain its full portion of air from the atmosphere, it requires a year or more, if not purposely spread out: it resists putrefaction; but with the assistance of moisture it resolves organic substances into a mucous.

Marl is of three sorts; calcareous, argillaceous and silicious or sandy. All are mixtures of mild calx (i. e. chalk) with clays in such a manner as to fall to pieces by exposure to the atmosphere, more or less readily.

Calcareous Marl is that which is most commonly understood by the term *Marl* without addition. It is generally of a yellowish white or yellowish grey colour; rarely brown or lead coloured; it is seldom found on the surface of land, but commonly a few feet under it, and on the sides of hills, or rivers that flow through calcareous countries, or under turf in bogs—frequently of a loose texture, sometimes moderately coherent; rarely of a stony hardness, and hence called *stone marl*—sometimes of a compact, sometimes of a lamellar texture, often so thin as to be called *paper marl*. It often abounds with shells, and then is called *shell marl*; which is looked upon as the best sort. When in powder it feels dry between the fingers; put in water it quickly falls to peices or powder, and does not form a viscid mass. It chips and moulders by exposure to the air and moisture, sooner or later, according to its hardness and the proportion of its ingredients; if heated it will not form a brick but rather lime. It effervesces with all acids. It consists of from 33 to 80 per cent of mild calx, and from 66 to 20 per. cent. of clay.

To find its composition, pour a few ounces of weak but pure spirit of nitre or common salt into a Florence flask; place them in a scale and let them be balanced, then reduce a few ounces of dry marl into powder, and let this powder be carefully and gradually thrown into the flask, until after repeated agitation no effervescence is any longer perceived; let the remainder of the powdered marl be then weighed, by which the quantity projected will be known; let the balance be then restored; the difference of weight between the quantity projected and that requisite to restore the balance, will discover the weight of air lost during effervescence; if the loss amounts to 13 per cent. of the quantity of marl projected, or from 13 to 32 per cwt. the marl essayed is calcareous marl. This experiment is decisive when we are assured, by the external characters above mentioned, that the substance employed is marl of any kind; otherwise some sorts of sparry iron ore may be mistaken for marl. The experiments to discover the argillaceous ingredient (being too difficult for farmers) I omit. The residue left after solution, being well washed, will, when duly heated, generally harden into a brick.

Argillaceous Marl contains from 68 to 80 per cent. of clay, & consequently from 32 to 20 per cent. aerated calx. Its colour is grey or brown, or reddish brown, or yellowish or bluish grey. It feels more unctuous than the former and adheres to the tongue: its hardness generally much greater. In water it falls to pieces more slowly, often into square pieces: it also more slowly moulders by exposure to the air and moisture if of a loose consistence: It hardens when heated, and forms an imperfect brick. It effervesces with spirit of nitre, or common salt, but frequently refuses to do so with vinegar. When dried and projected into spirit of nitre, in a Florence flask, with the attentions above mentioned, it is found to lose from eight to ten per cent. of its weight; the undissolved part, well washed, will, when duly heated, harden into a brick.

Silicious or *Sandy Marls* are those whose clayey part contains an excess of sand: for if treated with acids, in the manner above mentioned, the residuum or clayey part will be found to contain above 75 per cwt. of sand: consequently, chalk and sand are the predominant ingredients. The colour of this marl is brownish grey or lead coloured: generally friable and flakey, but sometimes forms very hard lumps. It does not readily fall to pieces in water. It chips and moulders by exposure to the air and moisture, but slowly. It effervesces with acids; but the residuum, after solution, will not form a brick.

Limestone Gravel. This is a marl mixed with large lumps of limestone. The lime may be either calcareous or argillaceous; but most commonly the former. The sandy part is also commonly calcareous.

Gypsum is a compound of calcareous earth and vitriolic acid. It forms a distinct species of the calcareous genus of fossils: of which species there are six families. The general characters of this species are,

1. *Solubility* in about 500 times its weight of water in the temperature of 60 degrees.

2. *Precipitability* therefrom by mild alkalies, and also by caustic fixed, but not by caustic volatile alkali.

3. *Effervescence* with acids, if the gypsum be pure; but some families of this species, being contaminated with mild calx, slightly effervesce.

4. *Insolubility*, or nearly so, in the nitrous acid, in the usual temperature of the atmosphere.

5. *A Specific Gravity* reaching from 2,16 to 2,31.

6. A degree of *hardness*, such as to admit of being scraped by the nail.

7. When heated nearly to redness, it calcines; and if then it be slightly sprinkled with water, it again concretes and hardens.

8. It promotes putrefaction in a high degree.

Of the six families of this species, I shall describe only one; namely, that which has been most advantageously employed as a manure. Descriptions of the other five should be found in treatises of mineralogy. It is called *fibrous gypsum*. Its colours are grey, yellowish or reddish or silvery white, or light red, or brownish yellow, or striped with one or more of these dark colours. It is composed of fibres or striæ, either straight or curved, parallel or converging to a common centre, sometimes thick, sometimes fine and subtile, adhering to each other, and very brittle: its hardness such as to admit being scraped with the nail: commonly semi-transparent; in some often in a high degree.

Ashes Sifted coal ashes, those of peat and white turf ashes, have been found useful; red turf ashes useless and generally hurtful. Wood ashes have also been employed advantageously, in many cases; they contain either the four primitive earths, as Mr. Bergman asserts; or calcareous earth chiefly, according to Achard; or calcareous and magnesia, according to D'Arret. They also contain some proportion of phosphorated selenite, i. e. calcareous earth united to the phosphoric acid. Almost all contain also a small and variable proportion of common salt, glauber salt, and terrene salts, which, when in a small dose, accelerates putrefaction; also small bits of charcoal.

Charcoal is a substance well known. It has frequently and successfully been used as a manure. 1st. Youngs' Annals, 152, &c.

Soapboilers waste forms an excellent manure for some soils; it contains by Mr. Ruckert's Analysis, 57 per cwt. of mild calx, 11 of magnesia, 6 of argil, and 21 of silex.

Stable Dung. This is used either fresh or putrefied; the first is called long, the other short dung. Twenty waggon loads of long dung will after being thrown into a heap and suffered to putrefy for one year, make less

than 7 loads; so that by suffering it to rot in the yard, as is common in Maryland and Virginia, two thirds of the quantity, and more of the virtue is lost.

TABLE OF CONTENTS OF MANURES.

105*lb.*	Heavy inflam. air. cub. inch.	Fixed air. Cub. in.	Water. lb.	Coal. lb.	Calx and Magnesia. lb	Argill. lb.	Silex. lb.	Vol. alkal. lb.	Fixed Salts. lb.
Fresh cow dung*	—	—	—	3,75	1,2	0,15	2,4	—	0,6
Fresh horse dung*	—	—	88	10,2	1,5	0,5	3	—	0,21
Sheeps' dung*	—	—	—	25,0	9,28 calx 1 mag.	3	29	—	0,72
Rotten cow dung*	13,60	120	81	10	3	0,6	5	0,65	0,9 gyps. 0,24 fix. salts.
Earth resulting from rotten horse dung†	1,64	1	Water & oil. 38,15	18,75	6,2	1,5	23,43		
Soap boilers' waste*	—	—	—	—	57 calx 11 mag.	6	21		

* Ruckert. † In Encyclopæd. Art. Vegetation. Hassenfraz.

Hence they should be applied, not indiscriminately, but according to circumstances, to be indicated in the sequel.

Pounded bones form also manure, much used in the neighbourhood of great towns. They gradually deposit their oily part, which contains a large proportion of animal coal, which is extricated by putrefaction and phosphorated calx. Hence bone ash is also useful. *Sea weed* particularly if mixed with earth soon putrefies and makes a good manure. *Sweepings of ditches* abound with putrid matter from decayed vegetables, and hence form a manure. *Old ditches*, exposing a large surface to vegetation, contain, when destroyed, a quantity of decayed vegetables, which putrefy and make a good manure; but in this and the former case it may be proper to distinguish of what soil they are composed, for reasons that will hereafter appear. *Fallowing* is the principal operation by which exhausted lands are restored to fertility; its use seems to me to consist in exposing the roots of vegetables to decay, whereby food for a fresh growth is prepared; the atmosphere also deposits fixed air and carbonaceous substance on earth long exposed to it. *Draining* is an operation equally necessary and well known, on which no more need be said here. *Paring* and *burning* reduces the roots of vegetables to coal and ashes; and thus prepares both a stimulant and nutriment for plants, as will be seen hereafter. Query—Whether it does not carry off more of the oils, fixed air, and other carbonaceous matter, than it restores. Q.

R My experiments convince me that fire does.

It is difficult to have the fire so smothered as to prevent the escape of these principles.

SYLVANUS.

[To be continued]

On the culture of Potatoes.—In a letter from the Hon. Wm. Findley, of Pennsylvania, to the Editor.

SIR, Greensburg, May 25, 1811.

I receive your magazines duly. I received No. 22 yesterday. I observe by it that the potatoe is now greatly encouraged in Britain, where it had but a small

spread when Arthur Young wrote. About 50 years since or less, few potatoes were raised in this country, and bad. They were small, of a red colour, full of eyes, and of a sharp disagreeable taste. They about that time appeared in Ireland, but were soon dismissed; they were there called the New England potatoe.—Other potatoes were introduced from Ireland to this country. About 40 years since large white potatoes swelling into large knobs, and extremely productive, were introduced I do not know from where. In 1770 I procured half a bushel of them as a great favour, and the produce was astonishing. Many planted large quantities to feed cattle and hogs. I was informed that some farmers give them to horses, but I do not know in what manner. In a few years, this kind dwindled; they gradually ceased to have knobs, became small and unproductive, and were neglected Other varieties have succeeded with different success: endless varieties may be produced from the potatoe apple: but I have not witnessed much improvement by that method in this country.

That the most successful method of improving that valuable root, is accomplished by transplanting it frequently from one climate to another, is, I think, reduced to a certainty. Changing soils in the same climate has but little effect. I have tried them on all varieties of soils. I have on several trials, found that a high dry stony soil, produces the most agreeable potatoe for the table, but in small quantity. I have had them good in rich bottom land. Their goodness depends much on the seasons.

Several proofs might be given of the improvement by change of climates. In every new settlement to the westward they excel. Their goodness and produce has been the boast of the settlers; but they gradually depreciate. The settlement of Westmoreland, where I now live, commenced in 1768, when that root succeeded astonishingly. I removed to it from Franklin county, near

the Maryland line, in 1781, I found the potatoe much depreciated in that time; and raising it became gradually unprofitable, until we got new seed from below the mountains; these in some years depreciate and are supplied by new seed, always with evident advantage.

I have found the potatoe the best in Philadelphia of any city where I have had occasion to spend the winter; but they very frequently import a change of seed from Ireland. In Lancaster, where I spent several successive winters, I found that root much inferior, tho' the soil is superior, and the climate nearly the same. They did not change their seed. In the District of Columbia, where I have passed eight winters, I found that root of such an inferior kind that I seldom eat of it, though there were some exceptions. On remarking this circumstance to some well informed Agriculturists of Virginia, they informed me, that that root did not succeed in the Columbia District, nor in Virginia, nor generally in a Southern latitude. That this observation is at least in a good degree correct, is probable, for I am assured that it succeeds better in the Eastern than in the middle States, and better in the province of Maine, our most northern boundary, than even in Massachusetts. There are, however, exceptions to this rule.—Mentioning the circumstance to the Honourable Edwin Gray, of Virginia, he informed me that he raised as good potatoes on his own farm as ever he had met with in Philadelphia; but that he frequently changed the seed, and paid due attention to its culture. Further instances are not necessary, and a change of seed may be now easily procured from different soils and climates.

We have been lately informed, in your Magazine, No. 21, by a reverend gentleman of Worcester county, Massachusetts, that the potatoe is excellent feed not only for cows, sheep, and hogs, but for horses. I wish he had informed us how they are to be given to horses. Cows, sheep, and hogs, will eat them raw, and even fatten on them, when at large, but hogs will not fatten on them nor eat them freely in the pen; we however then give

them generally boiled and mixed with meal; to such people as have but one or two cows, for which they can attend to boiling and mashing the potatoe, it is excellent feed, and produces very rich milk; but it is known that to mankind who have been under the necessity of using them raw, they have been very prejudicial, and yielded no nourishment. I agree with the reverend gentleman, that the culture of the potatoe is an excellent preparation of the ground for a wheat crop: it is indeed so for any crop, particularly for flax. Some further information from that gentleman on the best method of sowing and applying them would be very gratefully received.

I have often thought it strange that the introduction of a plant so extensively useful to man and beast, and which in some countries makes the principal part of the food of men, and even in great part of this country where bread corn is so plenty as to be an article of export, the potatoe finds a place at dinner with the most wealthy as well as the poor, is so little known. I have carefully enquired after it many years since, and the best ascertained tradition I could obtain was, that in one of the famous Sir Walter Raleigh's voyages from America, he stopped at Tory Island, on the north coast of Ireland, where he left some of the potatoes, which being planted, grew and produced apples on the top, which could not be rendered agreeable by any mode of cookery. No more attention was paid to the plant, till on ploughing the land in the Spring, they, to their astonishment, found apples at the root also, which with boiling or roasting made good food. They then took care to propagate them. Those that he took to England, were lost. Hence it was, that being propagated through Europe, &c. from Ireland, where they still succeed well, they were called the Irish potatoe. No such plant was in Europe till early in the 17th century, very little more than 200 years ago. They have long been the principal food of the numerous class of poor natives in the South of Ireland, and have supported there an astonishingly rapid increase of population. And the consumption

of them in the north, I am well informed, has increased very much during half a century past. They progressed slowly in other countries of Europe, where the established Clergy had great influence on the consciences of men, and depended on tythes of grain for their living, they used their influence against the propagation of the potatoe. The famine and starvation blockade, which accompanied and promoted the French Revolution, gave a spring to the cultivation of the potatoe in that country, and Count Rumford had before successfully introduced them into Bavaria. It is expected that their general cultivation will tend greatly to increase the population of at least the north of Europe.

If the Tobacco introduced by the same great man, had met with so little opposition at first, and not become such a source of revenue afterwards, its first introduction would have been as little known as that of the more useful potatoe.

I may, perhaps, hereafter send some observations on the changes of the growth of Timbers, confirming what I see in your Museum.

Your obedient Servant.

WM. FINDLEY.

Merinos still improving in the United States—as contained in a letter from the Hon. R. R. Livingston, of Clermont, New-York, to Mr. Custis of Arlington.

Dear Sir, *Clermont, 22nd March*, 1811.

I received a few days since your favor of the 8th. I am happy to learn by it that your expectations have been answered in Hamilton. I doubt not that you will find a mixture of the Merino blood an improvement even to your long wooled sheep, and that you will improve the quality without diminishing the quantity of your wool. And to the Smiths' Islanders, it will certainly do no harm, it will render their fleeces closer, and

thereby adapt them better to the exposure they must bear in their demi savage state. I have the pleasure of thinking that my flock improves annually, both in beauty of form and quality of fleece, and that it has a decided superiority over the imported Merinos. The great number that have been brought into New York, has enabled me to become acquainted with all the different breeds of Spain, except those of the Escurial, none of which have as I believe, as yet been imported. Though I have a letter from a gentleman in Lisbon, who writes me that he, in conjunction with Lord Cochrane, (his nephew) are in treaty for all that remains of that flock, the greater part of them having been destroyed. They are to be sent to New-York, and may be hourly expected, six of which he very politely presents to me, as he had before done six of the Guadaloupe flock; my six having been selected out of 500, all that arrived out of 2100 that were shipped on his and Lord Cochrane's account. As I was resolved that neither prejudice nor expence should deter me from giving a fair trial to those sheep, I have laid out near $ 6000 in the purchase of the first imported stock, and have accordingly added to my flock thirty imported ewes, from which I have thirteen lambs. These are the finest wooled of the imported stock, they are longer legged, and smaller horned than the Paulers, of which I have fourteen; these are close wooled sheep, very compact in their make, and too short for beauty. The Negritti of which I have two, are larger but not so fine wooled. The Guadalope are longer legged and longer bodied than the Paulers (of these I have six ewes) are heavier than the Infantadoes and equal to them in the fineness of their fleeces. They are upon the whole, in point of form, beauty, size and fleece, the finest of the imported sheep, though still far inferior to the Rambouillets. My present project is to study the advantages and defects of each species, and by proper admixture with my rams, to improve them all. This I can do to more advantage, for, as the demand for rams will not,

probably be so great this year as it has been, I shall retain a number on hand, so as to select with care such as will best answer my purpose. I sent samples of my wool to England, as well as that from the imported sheep—my own full bred was pronounced superior to that of the parent stock—the half and three quarter are pronounced *excellent*—my *imported* ewes' wool, inferior to that of her descendants, and to one of the 7-8; so that we have the best grounded reason to hope, that the Merinos will not at least degenerate here, which they are now very generally admitted to do in England, owing as is said to the moisture of the climate. I say this upon the authority of Mr. Shepherd, who is at once a manufacturer and a farmer, and who says that the fleece of a ram, purchased by him from the king, had greatly degenerated in 3 years, and that his half bloods were fast returning to the maternal stock. This has been confirmed to me by a very intelligent gentleman, who being lately in England, heard the question debated at a celebrated Agricultural Society, in London, at which the Duke of Norfolk presided, where the pro and the con were maintained with much pertinacity; but, he says, that afterwards, travelling in the manufacturing counties he was assured by the manufacturers, that there was no doubt, that it had greatly degenerated, and that they never would be able to dispense with Spanish wool, notwithstanding the opinions of Lord Somerville and Doctor Parry—yet, it is certain that England has been very celebrated for its fine wool many centuries back. Polydore Virgil wrote in 1530, (my edition of his book, was printed in 1546) and has the following passage in his description of England "Colles passim multi, nullis arboribus consiti, nullisque aquarum fontibus irrigui, qui herbam tenuissimam atque brevissimam producunt, quæ tamen abunde ovibus paululam suppeditat, per eos ovium greges candidissimi vagant, quæ sive cœli, sive bonitate terræ, mollia et longe omnium aliorum tenuissima ferunt vellera. Sed terræ sterilitati id cum primis, teste Virgilio, assignandum est" As

no sheep were found here, by the Romans, but were probably introduced by them, and fed only upon the hilly country, they may have better resisted the influence of the climate than at present, when much of the low and marshy land is brought into cultivation. If they should not retain their fine coats in England, the introduction of the Merino here, will be the more important as they must either obtain their supplies from us, or send their manufacturers to work the wool up here—I am sorry the winter has been so unfavorable to your flocks, mine have passed through it very well. I wintered about 700, and except a few that died from having been castrated too late in the season, I have lost but four by disease and accident. Some others however have not been so fortunate. Into some fine flocks in this state, the clavean or small pox has been introduced from the foreign sheep, and great numbers have died with it Too much caution cannot be used to guard against the introduction of new complaints, the imported flocks having many with which we have hitherto had no acquaintance.

I thank you for the ewes you are so obliging as to offer me. I shall not fail to receive them with pleasure, and to cultivate them with care, as well for their intrinsic merit, as for the sake of the donor.

I have a very remarkable instance of fertility in my flock of common ewes, of which I have about forty, several of which have not yet lambed—From twenty three I have forty eight lambs alive and well, 21 cast two, and two brought three lambs each; they were tupped by a full blood Merino of 18 months old, who had before run to about 100 ewes, that I sold in lamb. It does not appear to have injured him. He is now the largest sheep I have seen in this state, and will, I think, weigh about 200 wt. and give at least 12 pounds of wool. His first coat was 11 pounds 11 ounces. Accept Sir, my best wishes for success in your useful projects, and

Believe me, with esteem, dear Sir,

your obd't humble servt.

R. R. LIVINGSTON.

NATIONAL INSTITUTE.

One of our late French papers contains the Report of the National Institute at Paris, for the year 1810. The following is an abstract of the most interesting part.

Messrs. Guy, Lussac, and Thenard, have directed their attention to compare the relative powers and energies of different galvanic piles. They have discovered, that the force of the pile is not increased in proportion to the number of plates. To produce a double effect, the number of plates must be increased eight times. In general, it was found that the quantity of gas the piles will produce, is nearly in proportion to the cube root of the number of plates employed. Amongst the discoveries to which the galvanic pile has given rise, there are few more interesting to general chemistry than the transformation of the alkalies into combustible substances of metallic splendor.

The transformation, first discovered by Mr. Davy, was afterwards doubted by Messrs. Lussac and Thenard. In their former report they were disposed to consider potassium and sodium as combinations of the alkalies with hydrogen, and to class them amongst the compound substances called hydrurets; subsequent experiments have led them to incline to the opinion of Mr. Davy, and to regard potassium and sodium as simple metallic substances.

M. Berthollet has communicated a process for making the muriate of mercury, called mercurius dulcis or calomel, by passing oxygenated muriatic gas through mercury; it combines rapidly with the metal, and forms with it the muriate of mercury; and as this metallic salt has a perfect analogy with other mercurial salts, produced by other acids and mercury, at the minimum of oxydation, he concludes that the mercury in forming this combination has been reduced to an oxyd by the oxygene of the acid, and not by that of the water.

M. Guyton has directed his attention to the mode of giving a permanent red colour to glass, by means of copper, which by accident he first discovered might be done. M. Sage has also taken a part in these experiments, with the intent to colour glass red by means of copper and the phosphate of lime, or with bones; and he has shewn crystals of glass, from the bottom of the pots used to melt glass, in the bottle manufacture at Seves, which had some resemblance to hexœdial prisms. It is well known that simple means have been discovered to extract soda from common salt. France formerly imported this article, so necessary to the arts; an inconvenience attended the mode of preparing it, from the quantity of acid gas which escaped, and was highly injurious. Amongst the different means of preventing this inconvenience, which have been attempted, that of M. Pelletan the younger, is deserving of notice. It consists in making the muriatic acid gas pass through long horizontal tubes, partly filled with calcareous earth, which absorbs the gas, forming with it the muriate of lime. The experiments of M. Sage on plumbago, (black lead,) show that this substance does not contain any iron; but consists of coaly matter mixed with one-tenth part of clay. The fossil carbon of St. Symphorien, near Lyons, approaches nearer to this substance, than any other known mineral.

M. Deveaux has presented to the class of agriculture, a loaf of sugar, made from the red beet (betterave), which had all the whiteness and flavour of sugar from the cane. He has announced, that this substance may be made in great quantities by the proprietors, who have devoted to this attempt 400 acres of ground. Should it succeed on the great scale, it will change the relations of the two worlds.

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Errata.

Page 228, line 11, for *woolen* read *woven.*

Page 368, line 6 from the bottom, the * ought to have been prefixed to the word *washed*, and the † to the word *unwashed.*

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